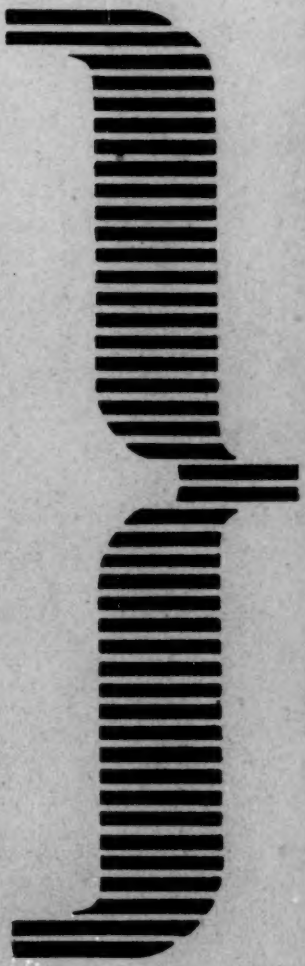
etc.

a review of general semantics



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NEWS AND MISCELLANY

GENERAL SEMANTICS IN AUSTRALIA

MEMBERSHIP LIST OF SOCIETY FOR GEN-ERAL SEMANTICS

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ETC.:

A REVIEW OF GENERAL SEMANTICS

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READING CLINICS ANATOMIZED:

Or, How Did You Learn to Skate?

O. R. BONTRAGER *

What we have to do we learn by doing.
ARISTOTLE
Words are but holy as the deeds they cover. SHELLEY

PSYCHOLOGISTS have long argued about learning. They have devoted an appalling amount of effort in verbalizing about how practice, otherwise known as exercise or drill, operates, or whether it operates at all. Academic fervor about 'synaptic-resistance,' 'refractory period,' 'stamping in,' 'recovery phase,' 'organismal trace,' has for years been loosed in a gigantic verbal battle of 'It *is*'; 'It *is not*.' The score at this writing might well be summed up in this manner: No one in 1945 knows what happens under my skin when I crook my finger.

It would be important to know exactly what processes are in operation when an individual learns to read, for example. Tons of paper would thereby be saved. It would be helpful if external conditions could be arranged which would guarantee learning. Perhaps at some future date the answers will be known; however, in 1945 the earth continues to revolve even in the absence of 'how.' And today, as in ages past, it does not require the sagacity of a college professor to observe:

1. That no human being has yet achieved walking without walking.
2. That an essential ingredient in learning to talk is talking.
3. To learn to skate requires skating.
4. To learn to read requires reading.
5. Etc.

In life, learning exhibits one very perverse characteristic: what is learned at least appears to resemble closely *what is done* and not what the teachers *play* is being done. If there is any doubt on this score, then the English teachers, to use one example, might explain the 'True Confessions,' 'True Romance,' and other 'True' circulation figures.

A School for Skating

A skating school functioning in accordance with practices widely prevailing in current reading instruction would operate something like this. The curriculum staff has made a careful analysis of skating to discover the 984 things a good skater will do. It has prepared a course of study of 'graded skills' in learning to skate. A 'school-minded' Board of Education has provided a modern school plant with all the equipment. An administrative and supervisory staff has been assembled, armed with degrees and credentials testifying to approved credit in 'Skating in the Elementary School,' 'Skating in the Secondary School,' 'Tests and Measurements in Skating,' 'Skating for the Atypical (who isn't?) Child,'

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'Administration and Supervision of Skating,' 'Skating Aptitudes,' 'Skating Disabilities,' 'Clinical Procedures in Skating,' 'Research in Skating,' 'Differentiated Techniques in Skating,' 'Neurology of Skating,' 'Techniques in Remedial Skating,' 'Seminar in Skating,' 'Guidance in Skating,' 'Skating for Democracy,' 'Skating for the Emergency,' and 'Problems in Post-War Skating.'

In Grade I (I believe it is more polite to say *level* now) we are told that the objectives are skating 'readiness' and preparation for skating. Around the room are pictures of ponds and skating rinks and Sonja Henie. The children are discovering the different types of skating:

I. Ice skating
   a. Outdoor ice-skating
      1. Pond
      2. River
      3. Puddle
   b. Indoor-rink ice-skating
II. Roller skating
   a. Sidewalk roller skating
   b. Indoor-rink roller skating

Children have beautifully illustrated 'Before-We-Skate' books. From these they are learning likenesses and differences in skates; how to tell skates for the right foot from skates for the left foot. Motor coördination is developed by tracing with the finger-tip skate tracks across the picture of the pond. To learn proper sequences at a skating party, they engage in conversation about a series of pictures and 'tell what you think happened next.'

In the corner children are busily engaged drawing pictures of ponds and winter landscapes. Some are making skating scrapbooks. One little group is carrying on an activity in which they are actually making a frozen pond in an old pie tin. They have discovered that paraffin makes splendid ice, while the banks of the pond are covered with fluffy, newfallen, cotton snow, dotted with conical green-colored paper evergreens and highlighted with a clever bonfire, composed of an old flashlight covered over with cellophane logs made by the kiddies themselves.

As we pass hurriedly through the upper rooms, we see on every hand the evidence of carefully graded, directed, supervised, and administered activities:

In Grade, or 'Level' 2, the activities are:

1. Studying skate shoes (shoes come before skates)
2. Studying skates
   a. Ice
   b. Roller
3. Learning to tie shoe-strings (each child makes his own strings out of paper)
4. Flash-card drills on recognition of shoes and skates
5. Learning to buckle skate-straps.

Later on there will be courses in Geography of Skating, European Background to Skating, the Arithmetic of Skating, Health in Skating, and Skating Composition.

In the gymnasium, the children are learning many of the 'fundamentals.' Long rows sit on tables dangling their legs in the manner necessary for skating. Much stress is placed on good posture, proper breathing, rhythm, and motor coördination. There is 'toe turning,' both for simple and figure-skating. Children are very carefully observed; those who show any tendency toward reversals are referred to the clinic. In one of the better schools, a number of neurological cases, involving skating aphasia, are under observation. Over in one corner is an elementary group in 'learning to get up after putting on skates.' To be sure, they do

not have skates, and there is no ice, but the 'fundamental' skills are the 'same.' Here is a group practicing 'balancing on the right foot.' Another is engaged in 'balancing on the left foot.' Still others are occupied with 'leaning in the direction of the turn,' while an advanced group acquires 'skill in holding the partner,' and 'turning in toes to stop.'

In the high school mathematics class, the geometry class is studying skating curves. The teacher is trying to develop some 'appreciation' for the mathematics of skating by having children study ice-skate tracks and identify the various geometrical forms. This is considered one of the newer trends since we find so many geometrical forms everywhere in nature—ice crystals, for example.

In the academic curriculum there are courses in Skating Appreciation and the Science of Skating. For the pupils who do not have the 'aptitude' for the academic skating courses, there is vocational guidance in skating. Many practical courses are offered in the vocational curriculum. In some of the tryout courses, the pupils have the actual opportunity of examining different kinds of skates, and many excursions are taken in order that the pupils might see for themselves how skating is done.

Of course, there are provisions for *the* exceptional child. Those with 'high' S. Q.'s (skating quotients) have 'enriched' courses in which pupils concern themselves with the cultural aspects of skating. Here is a group that is preparing a report on the materials from which skates are made, from the days of the ancient Pharaohs to the present, and what pre-historic skates were like. Every attempt is made to 'integrate' the personalities of the children and to make provision for the expressions of their creative tendencies. One boy has written an original poem about skates. Another has prepared an interesting historical account of colonial skating games in Washington County. Two of the outstanding atypical children are carrying on a bit of interesting research on the philosophy of skating. To stimulate them, they have been permitted to take a trip to the college campus for a special interview with the head of the Department of Philosophy.

There are two special rooms for the 'subnormals.' After careful testing, it has been determined that approximately ten per cent of the pupils can never learn to skate. Special provision is made for these in accordance with their 'abilities.' They are taught to gather wood for bonfires for the skaters, sweep snow and confetti off the ice, carry pop-bottles from the rinks, and knit scarfs and warm stockings for the skaters. Since there is no wood, ice, or snow, they contrive various representations for these under the guidance of the teacher. However, the scarfs and stockings are 'really' knitted. They also learn to sing very elementary skating songs. Everything is done to make them as happy as possible.

The school has excellent clinical services. Remedial treatment is given to the non-skaters. Here skilled treatment is given for those who are lacking in skating discrimination, skating regressions, skating confusions, reversals, and concentration. As a result of data that have been collected, objective tests for measuring skating rate, skating dexterity and skating comprehension have been developed and are published in the school's print shop. The school previously mentioned has accumulated some very interesting neurological data on skating-blindness which the Research Director will present at the next state conference on Atypical Skaters.

A year or so ago, one of the more observing teachers began to wonder about

the fact that an increasing number of the pupils failed to learn to skate. She remarked about the fact that there was no pond or skating rink, and no skates, and suggested that perhaps some of the 'non-skaters' might learn to skate if they were given the opportunity to put on skates and skate. However, this teacher was soon discharged, because none of the 'authorities' on skating had mentioned ponds or skates in their books on skating. The principal also made a survey of current practices in the 'best' skating schools and proved very conclusively that the 'successful' schools did not have ponds and rinks at all.

Reading in Action

I have probably written enough about skating to suggest what is to follow. I know of no way to evaluate an individual's skating other than by observing him skate. I cannot evaluate a pupil's reading unless I can observe him read. In short, *I cannot evaluate a pupil's reading in my clinic.*

The reader can appreciate the terrific operation of self-deflation that I have just performed.[1] Read it again, and consider that what I have written, if followed, would mean the extermination of the 'reading clinic' experts.

I repeat: *a pupil's 'reading' cannot be properly evaluated in a clinic.* I say this because the clinics I have known, either by direct experience or through the articles describing their activities, are not places where a pupil *can* read. That is, he cannot engage in performances which out in the world are called reading. A few illustrations should clarify this point.

When Dr. Horn and Miss McBroom[2] asked people out in the world what they do when they read, they replied in substance:

'If I want to go to San Antonio, Texas, I read to find the best connections.'

'If I want to assemble a new lawnmower, I read a sheet of paper which contains the directions for assembling it.'

'When I have a report to prepare for the club, I read to find appropriate material for my paper.'

'When I present to the club the paper I have prepared, I read the paper.'

'When I have some unoccupied moments, I occasionally sit in the easy chair and read a magazine or book.'

'Occasionally, I recall a poem that I particularly like. I find it and read it aloud.'

These, together with twenty-odd other situations, represent the conditions under which living beings in the world read. *This is what the readers report.* Not the experts. No one who reported referred to reading as what happens when thirty individuals sit, feet flat on the floor, each looking at a green book bearing the label, Grade 6, while one of the individuals makes a noise over the book. No one has time for, or considers such stunts important, in the world outside of a schoolroom. Before any one of my reading authority friends asserts in a frenzy that such things no longer happen in our schools, I suggest he put aside his books and monographs on the 'new' reading programs and go out and look into some schoolrooms. He might also talk to a book salesman from whom he could readily ascertain that the purchase of 'basic' sets of readers is still desirable.

[1] The writer was formerly Director of the Reading Clinic, State Teachers College, California, Pa.; also Visiting Lecturer, Reading Clinic, Pennsylvania State College, State College, Pa.

[2] Horn, Ernest and McBroom, Maude. 'A Survey of the Course of Study in Reading.' *Extension Bulletin* (Iowa City: Extension Division, State University of Iowa).

In each of the situations listed by Dr. Horn and Miss McBroom, reading is a means to an end. The individual reads because it seems necessary to do so. Here is a lawnmower to assemble, some money to invest, a trip to take. The reading consists of whatever happens *in connection with* some enterprise that the individual wishes to carry on.

Now I raise a question that I have asked hundreds of my students. Their answers have been overwhelmingly in the negative. The question is this: how many times in your public school career did you ever pursue an investigation of a matter which *you* personally wished to investigate and which necessitated reading? How many times, for example, did you read in connection with a trip that *you* actually planned to take? How often did you engage in reading to discover directions for an undertaking that *you* actually were wanting to carry out? Oh, I do not refer to such make-believe as: 'Turn to page 98 and find the answers to the ten questions that follow.'

If your school experiences have not included acquaintance with situations in which reading was an integral part of some activity other than reading, then you did not read in the sense that reading is done in life outside the school. If this was the case, no teacher ever had a chance to evaluate you as a reader.

I know of no way to evaluate a pupil's 'reading' without observing him in action. Indeed, *reading in action* becomes the avenue over which a pupil must travel if he is to become skilled in proper evaluation. But in 1945 one looks in schoolrooms in vain for even meager evidences of reading in action. I can almost count on the fingers of two hands all the teachers I have ever observed who appeared to understand the necessity for appropriate action.

'Take a Radius'

How would you, for example, evaluate how well a pupil can determine the appropriate course of action in connection with a list of directions without actually observing how he performs in such a situation? If you assert that you can do so, then by all means you should capitalize on your skill and read palms at the customary fee. For, if you can demonstrate that you can do so, many major industrial plants in America would pay you triple your salary as a teacher. The traditional activities in a large majority of schools are such that pupils virtually never have the opportunity to practice in situations of this kind. In the elementary school especially, the opportunities are extremely limited. A few situations can be found in secondary schools, although here, teachers assume that pupils should come to them prepared to engage in such performances. In geometry, for example, the student may occasionally have the opportunity to follow directions for certain geometrical constructions. In some of the science classes, students may encounter directions for setting up an experiment. In cooking and industrial arts classes there may be situations which involve reading a recipe for a cake or instructions for constructing a table.

However, high school teachers seldom regard the reading aspect of their activities as a part of *their* work. Instead, they commonly point a finger at a 'reading' teacher somewhere and ask why the pupils have not been taught to 'read' so that they can be taught mathematics, science, cooking, industrial arts, etc.

This tendency to split what cannot be split manifests the widely prevailing 'elementalism' that exists in educational circles, reading included. A few teachers are aware that when 'reading directions

for a construction' is split off from the mathematics in geometry, *no geometry remains*. Some cooking teachers can be found who are aware that when the recipe, together with the evaluational (reading, etc.) activities that must be carried on in connection with it, are split off from the cooking activity, the latter disappears at the same time.

I recently saw one of the best illustrations of *reading in action* that I have ever observed. It was in a mathematics class. The eighth-grade pupils had been asked to do the following construction:

1. Draw a line MN.
2. On the compasses, take a radius more than one-half MN.
3. With M as a center, draw two arcs, one to each side of MN.
4. With the same radius and N as a center, draw arcs cutting the ones drawn previously at *r* and *s*.
5. Draw *rs*, crossing MN at X.

Statement: X is the midpoint of MN.
Check: By means of compasses, compare MX and NX.

What interested me was the fact that the teacher in this situation did not attempt a dementia praecox split of mathematics *and* 'reading.' She asked the pupils to make the construction.

There was a brief rattle of pencils, rulers, and compasses. Presently, a few of the faces took on a helpless look. The teacher summoned the helpless to her desk. 'Well, go ahead. Begin,' she said.

Still helpless, they fidgeted about from one foot to another, and nervously fingered pencils and compasses.

'Well, what is the first thing you are asked to do?' the teacher inquired.

'Asked to do?' A ray of light appeared to dawn on some faces. Here was news. The stuff asks that something be done. One pupil made his mouth go,

'Draw———a———line———MN,' he parroted.

'Go ahead,' said the teacher.

Still no response, except a deepening of the puzzled looks on three faces, and more fidgeting and fingering of pencils, rulers, and compasses.

'Well, I am waiting,' the teacher remarked.

At long last, one of the pupils came forth with some *action*. She drew a line.

'What have you done?' from the teacher.

'I have drawn *a* line,' from the pupil.

'What line were you asked to draw?'

Again, slowly intoned,

'Draw——a——line——MN'

'Have you drawn a line, MN'

'I have drawn a line,' came the reply.

'Yes, I see; but have you drawn a line *MN?*'

After long, painstaking effort, the teacher succeeded in getting the pupils to understand that to 'draw a line MN,' one takes a ruler, makes a straight mark on paper, then writes the letter M at one end of the mark and the letter N at the other end. She showed them that such a line might be drawn at right angles to the top edge of the paper, horizontally, or obliquely in an infinite number of positions. Any line, labeled by placing the letter M at one end and the letter N at the other, and drawn in any position, fulfills the requirements of the construction.

The puzzled embryo mathematicians were now ready for the next step:

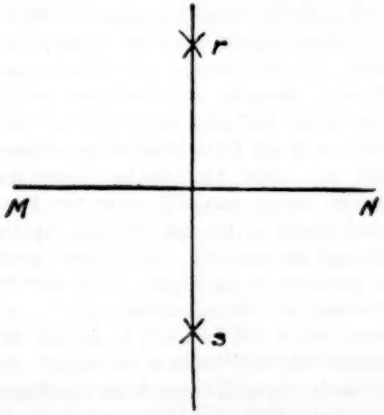
2. On the compasses, take a radius more than one-half MN.

Again the teacher asked them to proceed. Again the puzzled looks.

'On the compasses, take a radius.' What on earth is one to do? What is a radius? How does one 'take' a radius? How does one 'take' a radius on a com-

pass? How does one determine the length of a radius more than one-half MN?

I have subjected some prospective teachers who were graduated from high schools and have 'studied' mathematics to this item of the construction. Some of them looked as 'sick' as the pupils in that classroom appeared on that day.



Here in this mathematics class, I found *reading in action.* And the test of reading was not, 'fill in the right word,' or making a series of noises. In fact, every one of these puzzled pupils could make noises. I fancy that for the first time in their lives they learned the simple test of proper evaluation of a series of ink marks. The test: *What happens in action?*

These pupils puzzled, while the teacher, patiently and skillfully asking questions, demonstrated the appropriate techniques. It took her an entire hour. She said not a word about the reading teacher who had 'not taught the pupils how to read.' The entire mathematics problem for these pupils consisted of following, reading if you please, a list of directions for a construction. Subtract the 'reading' from the situation, and where is the mathematics?

How Can We Test 'Reading'?

These puzzled youngsters interested me. I later checked up on their previous school records, especially in 'reading.' In each case, they had received excellent marks in 'reading'. Later on, I observed them in a history class. Here they glibly verbalized historical noises. I wondered what would have happened had it been possible to provide a situation where these pupils could have been required to reveal through constructions (as in the mathematics class) their evaluations of the historical inkmarks.

At this point, I want to repeat the statement I made earlier: *a pupil's 'reading' cannot be properly evaluated in a clinic.* There is not in existence a 'reading' test which would enable the expert in his clinic to make a microscopic trace of a beginning of an evaluation of a pupil's 'reading' such as Miss Carroll made in her mathematics class. In reading clinics in 1945 we still play 'as if' we can evaluate reading performances by giving batteries of tests.

I hear an objector who immediately insists that this entire mathematics construction *could* be incorporated in a 'reading' test. And indeed it *could.* In fact, similar tests are available. They are distributed to classes of 30 to 40 pupils who take them under stop-watch conditions and then the correct pencil marks are added to make a score. But Miss Carroll made many discoveries as she watched that group of fidgeting youngsters *in action* that the analyzers of the test scores could not even guess.

A second fact that the objectors overlook is this: Miss Carroll, the mathematics teacher, understands that proper evaluation of the directions for bisecting a line *is not* proper evaluation of the directions for making pie.

Nor will she even assume that proper evaluation of the directions for bisecting a line will insure proper evaluation of the directions for bisecting an angle or an arc; constructing a line parallel to a given line; constructing a triangle, given the sides, etc. No. She will *continuously* evaluate *reading in action*, for she understands that such evaluations cannot be made *in absentia*. The evaluation of reading performance is not a matter which can be accomplished in one-half day (or two days, for that matter) in a reading clinic.

I know of no method which will enable anyone, expert or otherwise, to properly evaluate a pupil's evaluation of directions without being in the presence of *pupil action*. We have as yet no methods of evaluation by remote control.

Checking the Horn-McBroom list again, I find that in life individuals read in connection with gathering material to use in a piece of work to be done.

To properly evaluate an individual who reads in such a situation *necessitates observing him in action*. There are no tests by means of which such an evaluation can be made in a clinic. The test: how does the individual *act* in connection with reading done as he gathers material to use in a piece of work?

Suppose he is interested in preparing a paper on the history of his county to be read to a club? Where will he begin? What will he do?

First, it would appear that he would need to know where materials might be found. For example, if there is a library in the community, it should occur to him that he might find data there. He might remember that a surviving grandson of one of the pioneer families in his community lives on Second street. Perhaps the grandson would have materials.

Second, he needs to be able to locate the precise materials that will be of value. He goes, let us say, to the library. Now a library has stacks upon stacks of books. There are reference sections, periodical sections; there are library card files to manipulate. How does the individual *act* in such a situation?

Third, he has now located some valuable materials. Here is a *History of Western Pennsylvania*. But he is interested only in the history of Washington County. Must he read the entire book? Can he use the index or the table of contents to locate the section of the volume that will apply? Once he has located the section, which may still cover two hundred pages, is he able to skim rapidly through the material? Can he select what is pertinent to his paper? Is he able to evaluate and choose sections of the material which will be likely to interest the people who will listen to his paper? As he reads, can he distinguish the significant episodes which should be included? Is he able to order the episodes and events which he selects in such a way as to result in the most effective final product?

Proper evaluations of these performances can be made only where they are taking place. Repeated evaluations of individuals are necessary. It cannot be assumed that a pupil who succeeds in one such situation will succeed in a similar but different situation.

The reader should carefully evaluate the entire Horn-McBroom outline and ask himself: what would test successful performance in each of these situations? What, for example, would test successful performance of 'Reading aloud to others to give information in connection with points under discussion.'

In such a situation, a class might be discussing the question, 'Why did we enter into a war with Mexico?' Individuals have examined what a number of

historians have to say. They are discussing their findings. There are differences of opinion. The historians themselves have not agreed. How could they when the history of one day as reflected by two newspapers is often contradictory?

As the discussion proceeds, members in the class quote 'authority' by reading from sources. As an individual reads, presumedly he is interested in substantiating the point of view he is advocating. How can he do so effectively? Proper evaluation on his part will be reflected, perhaps, in ways like these:

a. Is his voice pleasing?
b. Can he be heard by the group?
c. Has he selected pertinent material?
d. Does he assume an effective attitude toward his listeners?
e. Etc.

Can such factors be properly evaluated by means of a paper test administered in a reading clinic? They cannot; they can be evaluated only by observing the individual in action. *It would be difficult to show that a single item on the Horn-McBroom list can be adequately tested by a paper test.* Furthermore, it is difficult to find schools where pupils have the opportunity to *act* in such situations. Suppose, for example, a pupil in your school were to undertake to *act upon* item number five in the third category of the Horn-McBroom list: situations in which one reads to one's self *to idle time away.* Would he be permitted to do it? I doubt it. Only in rare situations would he be permitted to do so in the sense contemplated by Dr. Horn and Miss McBroom.

I do not suggest that pupils in our schools do not idle time away. Far from it. In fact, we force them to idle away hours in dreary games of verbal baseball. In a few schools pupils are given as much as thirty minutes in a week for 'free-reading.' The remaining time is devoted to what everyone *must* learn.

Is it any wonder that so many people who find themselves with time on their hands can do nothing but drive up and down a strip of concrete or play bridge? For where would they learn the pleasant business of occupying themselves with interesting things to read? They do not learn at school. If you deny it, pick up at random a half dozen of the books you find in a typical classroom, examine them, and ask yourself: would I enjoy reading these during some of my free moments?

The blunt facts are these: teachers themselves generally have not learned through experience to like to read. Like their pupils, they never had the opportunity. There are exceptions, of course. Many of the exceptions go to the other extreme and like to read too well. In the second place, schoolrooms are not places where youngsters *can* engage in profitable leisure time reading. *Harper's, National Geographic, Atlantic Monthly, New Republic, Nation,* etc., cannot be found in thousands of classrooms in America. Interesting books of travel, biography, and science are likewise missing. Meantime uplift societies pass resolutions, along with the associations of teachers of English, deploring the 'reading tastes' of the American people, the increased circulation of *True Romances* and 'comic books.'

I know of no way of developing tastes without tasting. In a large majority of our schools in 1945, educators provide no opportunity for evaluating *tastes in action.* They still prefer to do this in clinics by having 'problems' check dreary lists of 'Books I have Read.'

Indeed, a recent bulletin of the Department of Public Instruction in Pennsylvania indicates that many high schools in

the state spent not one single sou for library books in 1935. The average expenditure per pupil in that year was thirty odd cents! What magnificent 'tastes' could be developed on such a mountain of books! Even a termite would starve to death.

All this may appear to be a harsh indictment of our educational practices. But it is late even to face facts. In education, we have mouthed Aristotle's line, 'What we have to do, we learn by doing,' for years. But we have not acted upon it. Instead, we have built skating schools without ice or skates.

'As soon as we have succeeded in finding the proper method,' said Comenius, 'it will be no harder to teach schoolboys, in any number desired, than with the help of the printing press to cover a thousand sheets daily with the neatest writing. . . . It will be as pleasant to see education carried out on my plan as to look at an automatic machine, and the process will be as free from failure as these mechanical contrivances when skilfully made.'

'Precisely,' replies Mumford: 'and what Comenius formulated in the seventeenth century, Gradgrind and M'Choakumchild will carry out in the nineteenth. Comenius invented modern pedagogy and helped ruin modern education.[3]

Our practices of educational isolationism have robbed reading of the breath of life. Under the philosophy of isolation, we rush the problems off to a clinic where profound case-studies are written and where, with iron gadgets and mechanical engines, excelling even those of Swift's academy of 'projectors' in Lagado, the sober clinicians act 'as if' they could pump life back into them again.

But the puzzling 'reading problems' increase in number. Somehow our words have not influenced our deeds. That words are not deeds, and 'are but holy as the deeds they cover' may some day be understood, even by authorities in 'reading.'

But not yet.

[3] Mumford, Lewis, *The Condition of Man* (New York: Harcourt Brace, 1944).

The ancients who desired to illustrate illustrious virtue throughout the empire, first ordered well their own states. Wishing to order well their own states, they first regulated their families. Wishing to regulate their families, they first cultivated their own persons. Wishing to cultivate their persons, they first rectified their hearts. Wishing to rectify their hearts, they first sought to be sincere in their thoughts. Wishing to be sincere in their thoughts, they extended their knowledge to the utmost; and this extension of knowledge lay in the investigation of things. Things being investigated, knowledge became complete. Their knowledge being complete, their thoughts were sincere. Their thoughts being sincere, their hearts were then rectified. Their heart being rectified, their persons were cultivated. Their persons being cultivated, their families were regulated. Their family being regulated, their states were rightly governed. Their states being rightly governed, their whole empire was made tranquil and happy. From the emperor down to the mass of the people, all must consider the cultivation of the person, the root of every thing besides.

CONFUCIUS

INTEGRATIVE LEVELS IN BIOLOGY[1]

ALEX B. NOVIKOFF

[FOREWORD BY A. KORZYBSKI: *The following paper by Dr. Novikoff may be considered as complementary to Jerome Alexander's 'Successive Levels of Material Structure' (ETC. Vol. I, No. 3). The physico-mathematical, colloidal orientations to be found in Alexander also permeate Dr. Novikoff's article. Let me suggest that Dr. Novikoff's use of the terms 'matter,' 'material,' 'substance,' etc., implies that they are to be taken in the sense of Alexander's higher orders of complexities of dynamic structure. The reader interested in the difference between static 'old matter' and dynamic 'new matter' should consult Chapter IX on 'Colloidal Behaviour' and Part X 'On the Structure of "Matter"', in my* Science and Sanity.

Dr. Novikoff discusses the methods of evaluation in biology to be found among his modern colleagues. It may be suggested that what work of his colleagues Dr. Novikoff approves may be considered non-aristotelian, and what he disapproves, rather forcibly, may be considered aristotelian. From a general semantics point of view the differences in methods of evaluation among biologists are the best implicit example I know of the contrast between artistotelian and non-aristotelian orientations. He does not analyze directly the influence of aristotelian biology, with its 'philosophical' implications, but the foundation of the present difficulties can be traced back to the aristotelian system.

Aristotle was fundamentally a biologist, over two thousand years ago. Obviously he could not know modern electro-colloidal advances, and so his 'weltanschauung' was naïve and over-simplified. His psycho-logical assumptions prevented him from discriminating sharply between animal and human biologies. Aristotle no doubt was an outstanding genius of his day and, unfortunately for us, he codified his prescientific biological beliefs of those days into a system, which includes 'logic,' 'psychology,' 'philosophy,' metaphysics, physics, history of animals, politics, rhetoric, poetics, ethics, etc. All through his system there are many psycho-logical commonsense macroscopic observations based on his limited biological orientations, the consequences of which Dr. Novikoff is stressing even today.

Aristotle's prescientific assumptions were elaborated and perpetuated by the 'philosophers' and church fathers through the Dark and Middle Ages. The consequences were tragic for Indo-European culture, as there was no escape from identification of animals and humans, resulting in anthropomorphism, general identifications (so common with the maladjusted), teleological fallacies, and other paralyzing evaluations which plague us today. Even the sick and ignorant Hitler and his ilk are the direct progeny of the centuries of elaborations and even distortions of Aristotle's pioneering work. If Aristotle had been treated as any modern scientist and pioneer, his system would have been gradually revised. But in the Dark and Middle Ages it became a dogma, and that dogma produced the harm, particularly because some 'vested interests' found that system useful to them in maintaining power.

As I explained on page 97 of Science and Sanity, *there is a definite relationship between the aristotelian system and the euclidean and finally newtonian systems which resulted from it. They were found dangerously inadequate today because they were unable to deal with the electrical character of the world and the electro-colloidal character of life. Revisions yielded non-euclidean, non-newtonian (einsteinian), and finally non-aristotelian systems. The Greek systems were fundamentally static. See ETC., Vol. I, No. 2, 'One Golden Age: Mathematics since 1801' by Eric T. Bell, on the static character of Greek mathematics. See also that controversial book* The Road to Serfdom *by Friedrich A. Hayek, and the review by Lawrence Frank in* The Saturday Review of Literature *(May 12, 1945), in which Dr. Frank traces Hayek's thesis to the*

mechanistic theories of Newton and the animalistic theories of Darwin, all products of aristotelian evaluations. Similarly, Stuart Chase in his article 'Back to Grandfather' in Nation *(May 19, 1945) clearly and justly shows that the dangers of Hayek's thesis can be traced back to the aristotelian, antiquated, limited, two-valued orientations, disregarding many factors which such methods of evaluation cannot handle adequately. These are the very problems we are dealing with in our non-aristotelian work.*

The importance of the article by Dr. Novikoff is that he brought some fundamental points to a sharp focus. The history of biology has been a stormy one, and its progress very slow, due exactly to the reasons emphasized by him, and its saturation with primitive and aristotelian formulations involving so much metaphysics.

I struggled with the problem of the serious difference between animal and human biologies in my theory of time-binding (see Manhood of Humanity, *1921). My further analysis of human time-binding behavior ultimately led to the building of a non-aristotelian system. In fact, the formulating of such a system would have been impossible without that initial psycho-biological clarification.*

The cataclysmic tragedies of today, predicted by many men of vision, have shocked us to a painful awakening where we must search for and discover the silent assumptions which made such tragedies inevitable. We are faced with a weighty decision: Will we continue to follow the groping, stultifying, course molded by the dogmas of the Dark and Middle Ages, or shall we investigate structurally new, non-aristotelian systems upon which a firmer and saner society may be built for the future?]

THE concept of integrative levels[1] of organization is a general description of the evolution of matter through successive and higher orders of complexity and integration. It views the development of matter, from the cosmological changes resulting in the formation of the earth to the social changes in society, as continuous because it is never-ending, and as discontinuous because it passes through a series of different levels of organization—physical, chemical, biological and sociological.

In the continual evolution of matter, new levels of complexity are superimposed on the individual units by the organization and integration of these units into a single system. What were wholes on one level become parts on a higher one. Each level of organization possesses unique properties of structure and behavior which, though dependent on the properties of the constituent elements, appear only when these elements are combined in the new system. Knowledge of the laws of the lower level is necessary for a full understanding of the higher level; yet the unique properties of phenomena at the higher level can not be predicted, *a priori,* from the laws of the lower level. The laws describing the *unique* properties of each level are qualitatively distinct, and their discovery requires methods of research and analysis appropriate to the particular level. These laws express the new organizing relationships, *i.e.,* the reciprocal relationships of elementary units to each other and to the unit system as a whole.

The concept of integrative levels recognizes as equally essential for the purpose of scientific analysis both the isolation of parts of a whole and their integration into the structure of the whole. It neither reduces phenomena of a higher level to those of a lower one, as in mechanism, nor describes the higher level in vague nonmaterial terms which are but substitutes for understanding, as in vitalism. Unlike other 'holistic' theories, it never

[1] Reprinted by permission of the editors of *Science* from the issue of March 2, 1945 (Vol. 101, pp. 209-215). Attention is called to a further discussion of Dr. Novikoff's article by J. Needham, R. W. Gerard, and A. E. Emerson in *Science,* June 8, 1945.

leaves the firm ground of material reality. Integration does not imply, as Lillie has recently maintained, 'special vital factors'[2] or 'something of the mental or psychic.'[3] Both parts and wholes are material entities, and integration results from the interaction of the parts, as a consequence of their properties. The concept points the need to study the organizational interrelationships of parts and whole. This full recognition of both units and whole leads to a more adequate understanding of the whole.

The different levels of matter, while distinct, are not completely delimited from each other. No boundary in nature is fixed and no category air-tight. 'Mesoforms' are found at the transition point of one level of organization to the next. Between the highest level of organization of non-living, the crystal, and the lowest level of unicellular organisms are protein paracrystals, the viruses, with some of the internal structure and behavior of living substance. Between the single-cell organism and the multicellular organism are the colonial organisms. Yet the absence of rigid demarcation between two levels does not make the difference between them any less clear or fundamental. Mesoforms, 'the more clearly we understand them, will all the more clearly serve to bring out the essentially new elements of (the) higher order.'[4]

There is both continuity and discontinuity in the evolution of the universe; and consideration of one to the exclusion of the other acts to retard the development of biological and sociological sciences. Knowledge of the general qualities of development common to all levels of organization of matter will aid in the analysis and description of the concrete attributes of each level. But it can not be a substitute for such analysis or for the determination of the qualitative uniqueness of each level and the characteristic laws which govern it.

Physico-chemical and Biological Levels

The concept of integrative levels does not regard living organisms as machines made of a multitude of discrete parts (physico-chemical units), removable like pistons of an engine and capable of description without regard to the system from which they are removed. Its approach is one which biochemists are adopting more and more: living cells present problems not to be encountered in the test-tube or flask. The structural pattern of the cell plays a decisive role in many of the chemical reactions which constitute metabolism. The ordering, as well as speed, of the chemical reactions in the cell are largely the result of the distribution and activity of colloidal enzymes. Korr[5] has indicated that even simple colloidal systems 'represent a much higher level of integration . . . and that, because of the quantitative and qualitative modification which interfaces and their molecular groupings impose, there emerge new classes of phenomena for which there are no analogies in homogeneous systems, and which, therefore, require new sets of rules.' Commoner[6] has discussed the increased dependence of enzyme function on structural factors in the living cell. The degree of dependence of a particular enzyme system

[2] Ralph S. Lillie, *The American Naturalist*, 72: 414, 1938.

[3] Ralph S. Lillie, *Philosophy of Science*, 7: 327, 1940.

[4] Joseph Needham, *The Modern Quarterly* (London) 1: 30: 1938.

[5] Irvin Korr, *Cold Spring Harbor Symposia*, 7: 74, 1939.

[6] Barry Commoner, *Quarterly Review of Biology*, 17: 46, 1942.

on protoplasmic structure or physico-chemical organization can be revealed by changes in this structure, both natural and experimentally produced.

It has been the great contribution of the 'organicists' that they have demonstrated the error of the mechanistic reduction of the biological organism to the physico-chemical. It is therefore unfortunate that 'organicism' has been marred by non-material concepts. Organicists fail to picture the 'whole' as developing through the integration of individual units of matter into a single system; they omit a discussion of the organizing relationships of the parts. They try to describe the behavior of the organism solely in terms of the higher level, the whole. As a result, the impression is created that no material basis exists for the part-whole relation.

Almost all the text-book definitions of physiology reduce phenomena of living matter, a highly complex and integrated system, to the level of free molecules and atoms. Certainly chemical and physical forces are operative in cells, yet defining physiology as 'the physics and chemistry of life processes' overlooks the fact that the cell organization imposes a new and higher order on physico-chemical change, and that tissues, organs, organ-systems and organism impose a higher order on cell activity. Physiology rightly concerns itself also with the activities of the higher orders: cellular organization and function as well as chemistry and physics in the narrow sense; the tissue, organ, organ-system as well as the cell. No matter how complete our knowledge of the chemistry and physics of living systems becomes in the future, living substance must still be recognized as matter on a higher level, with new, unique properties which have emerged on combination of the lower-level units. When molecules become part of a highly integrated system, protoplasm, it is important to know the properties of the molecules, but protoplasmic behavior needs description in terms and laws which have no meaning for molecules, in specifically biological terms and laws.

Biological Levels

Within the biological level, there are a series of other integrative levels.

I. In the multicellullar organism there is a hierarchy of levels—cells, tissues, organs, organ-systems and organism. Viewed in terms of integrative levels, Heilbrunn's assertion that 'general physiology thus becomes cellular physiology' and that 'the ultimate mechanism responsible for any form of vital activity lies inherent in the individual cells'[7] is one-sided. A full understanding of the organism is not possible without complete knowledge of the activities of its cells. But knowledge of 'the individual cells' does not exhaust the problems of organism physiology; the activity of the individual cell is greatly influenced by the products of activity of other cells in tissue, organ, organ-system and organism.

The inadequacy of a cell concept in which the cell is considered an independent unit of activity is clear from the work of experimental embryologists. The embryo is not a collection of unrelated portions developing independently of each other; on the contrary, the development of any cell is dependent not only on its own constitution but also on the nature of the surrounding materials outside the egg or produced in adjacent cells of the embryo. If ectoderm cells which normally form belly skin were removed from a salamander embryo and transplanted over the mouth organizer of a

[7] L. V. Heilbrunn, *An Outline of General Physiology*, pp. 3, 4. Philadelphia, 1943.

frog embryo, they would develop into salamander structures — of the mouth; they would form teeth and not belly skin.

Similarly, in the adult organism, plant or animal, the behavior of a cell is influenced by the activity of other cells of the body. Thus, the hormone, auxin, produced in the apical cells of a plant, will cause the elongation of stem cells, inhibit the growth of cells of lateral buds, influence the course of differentiation of root cells and stimulate the growth of cambium cells. Chiefly through such hormones, the cells of the plant body are integrated into an organism. In animals, the activity of cells is under the integrating influence of nerve impulses, hormones and other cell products like carbon dioxide. Activity of cells of the salivary glands is dependent upon stimulation by nerve impulses begun elsewhere in the body. The behavior of uterine cells depends not only on its own constitution, but also on hormones produced by cells of pituitary and ovary. Carbon dioxide produced by muscle cells in the legs will influence the behavior of the respiratory center cells in the medulla.

Just as cells do not exist in isolation in the organism, neither do organs or organ-systems. Thus, the functioning of the heart (the rate and force of its beat) is not unrelated to the pressure of the blood in the aorta and carotid arteries, the diameter of the arterioles or the amount of blood returning through the veins; nor is the circulatory system unaffected by or without effects on the nervous, endocrine, muscular or respiratory systems. Coghill,[8] using embryos, and Lashley[9] and Goldstein,[10] studying adult animals and men, have demonstrated the weakness of an atomistic approach to the activity of the nervous system and have emphasized that it functions as an integrated whole.

II. Populations constitute a distinct level of integration, higher than that of the individual organism. Schneirla, in his excellent studies on the interrelations between individual behavior of the army-ant and the population unit or colony, stresses this point. 'Any social organization represents a qualitatively new emergent level not equivalent to that which might be attained through a mere summation of the properties of its constituent individuals.'[11] It is solely the reactions of the individual ant which are responsible for the highly organized mass behavior; yet 'strictly speaking, the Eciton worker has no behavior pattern outside the social sphere.'[12]

Dobzhansky, in his authoritative work on population genetics, similarly describes populations as higher levels of integration. The fate of a newly-arisen genetic variant depends not alone on its effect on the individual organism but also upon the 'dynamic regularities of the physiology of populations.' Thus, it is the effective size of a population which may determine whether a useless or even deleterious mutant will, through chance recombinations, become incorporated into the constitution of the group. The smaller this population size the less effective is selective pressure in evolution. Dobzhansky emphasizes that evolutionary changes are changes in the genetic constitution of groups — of populations. Through natural selection, migration, and isolation, biological groups are produced

[8] G. E. Coghill, *Science*, 78: 131, 1933.

[9] K. S. Lashley, *Brain Mechanisms and Intelligence*, Chicago, 1929.

[10] Kurt Goldstein, *The Organism*, New York, 1939.

[11] T. C. Schneirla, *Psychological Review*, 48: 465, 1941.

[12] T. C. Schneirla, *The Journal of Comparative Psychology*, 29: 447, 1940.

whose genetic structure is molded in relation to the environment. The laws of population genetics which describe these evolutionary changes are on a higher level than those of the genetics of the individual. 'The rules governing the genetic structure of a population are, nevertheless, distinct from those governing the genetics of individuals, just as rules of sociology are distinct from physiological ones, although they are in fact merely integrated forms of the latter.[13]

The concept of integrative levels stresses the need to study living organisms at all levels—cells, tissues, organs, organ-systems, organisms and populations. It is not 'organicist'; always the reciprocal relationship of elementary units to each other and to the unit system as a whole must be studied. It is not mechanistic; the detailed methods of study at higher levels will include not only some used at lower levels but new methods peculiar to the higher levels; the laws of one level will be expressed differently from those of the others.

Biological and Social Levels

According to the concept of integrative levels, man's social relationships represent a new level, higher than that of his biological make-up. Man's behavior differs from that of other animals because of his possession of body structures, notably, the highly developed nervous system, which make thought and speech possible and whose functioning is profoundly affected by social or cultural influences. Man possesses a unique head and hand, and is able to confront nature not only with his body but with tools devised and wielded by him. The crude tools of primitives give way to the more complex technology characteristic of modern society. As the technological forces change, the social and economic relations of men change, and, with them, man's behavior. Socio-economic or cultural forces thus come to dominate biological factors in directing man's actions.

In a penetrating analysis of Sigmund Freud's failure to recognize the inseparability of the biological and the cultural forces which determine man's behavior, Bartlett writes,

> The biological organism, by its existence in society, has become a 'new biological species.' . . . The biological organism is transformed; it no longer exists as a biological phenomenon, strictly speaking. Under the influence of society, the biological has become the psychological. New laws of motion have come into being which are neither biological nor sociological, but the subject of study of a different science, psychology.[14]

The concept of integrative levels, as it stresses the need to study the interrelationships between the biological and sociological, emphasizes the fact that the two constitute two distinct levels. Blurring this distinction leads to anthropomorphism and to mystical, often dangerous, statements about society.

Anthropomorphism — endowing animals, and even plants, with human attributes, psychical and social—transports the higher level (social) bodily into the lower level (biological). In doing so, it presents a wholly erroneous picture of the animal. The aspects of behavior common to man and animals are studied in comparative psychology, just as comparative cytology studies the uniformity of structure of diverse cells and comparative

[13] Theodosius Dobzhansky, *Genetics and the Origin of Species*, p. 11. New York, 1941.

[14] Francis H. Bartlett, *Sigmund Freud*, p. 80. London, 1938.

biochemistry the fundamental chemical changes common to all cells and organisms. Often, the significance of certain aspects of man's behavior (*e.g.*, instincts) can be illuminated by studies on lower animals where the problem may be analyzed more directly. And in the anthropoid apes, it is possible to investigate the beginning of reflective thought and of social influences on behavior.

Yet the study of animal behavior can not be a substitute for the study of man's behavior. As we establish the likenesses in behavior of animals and men, we must simultaneously investigate the fundamental qualitative differences between them. Except in certain pathological conditions, man's behavior is as unique as the organs which he, alone of all animals, possesses; thought, speech, labor are impossible without a highly developed brain and a hand. It is his unique biological constitution which makes possible the development of truly social relations among men. Many investigators studying the integrated animal populations, the so-called societies of animals, appear to have overlooked the fact that animal societies never rise above the biological level, that only man's society is truly sociological.

Any one who has tried to teach biological change to college students knows the barriers to learning which have been created by the identification of animals with men throughout the student's lifetime. Every phenomenon is approached by them in terms of human experience. There is no time scale other than the clock, calendar or century. Yet important biological change can be expressed only in a 'non-human' time scale. For each living organism travels at two enormously different speeds of life.[15] The comparatively rapid one is easy to comprehend because the changes can be observed; the birth, growth and death of the body, the movement of the plant on the window sill, and even the less obvious chemical changes of cells and organisms. But only the end results of changes over many thousands of centuries can be seen in the diverse plants and animals, each almost perfectly adapted to its environment. A species, in high-speed terms, is constant; but in low-speed terms, it is changing.

Thinking in high-speed terms of these low-speed phenomena leads almost inevitably to teleological conceptions, ascribing these phenomena to a divine purpose in nature. The terrestrial mammal has no gills because the air, containing little water, would dry out the exposed soft tissues; the earthworm has no eyes because it has no need for them, buried as it is in the ground. Such teleological reasoning is carried over even to changes which are directly observable. The heart beats in order to bring food-laden blood to all cells of the organism. The leaf bends to the light in order to intercept more energy for photosynthesis. There is no awareness that ascribing such purposive behavior to the heart or the plant imparts the ability to reason and to look into the future, in one case to a small individual part of the organism, and, in the other, to an organism which lacks a nervous system, let alone a brain!

The history of biology demonstrates that teleology explains nothing, and, worse still, hampers the search for explanations and causes. You do not study the causal development of eyes in worms if you believe their absence in earthworms is explained by the statement that underground worms need none. Nor do you trouble to analyze the causes of cardiac muscle contraction or the distribution of plant growth hormones if it suf-

[15] Henry Collier, *An Interpretation of Biology*, Chapter 5. London, 1938.

fices to say that the heart beats to pump blood and the leaf bends to get light. You do not study the causes of evolution or the explanation of mutual adaptation of organism and environment if you assert, as Gerard has recently, that the 'selection or creation of these particular mechanisms' is volitional or purposive.[16] Only when purpose was excluded from descriptions of all biological activity except rational behavior of human beings, could biological problems be properly formulated and analyzed.

Critique of Literature

In a recent volume devoted to the concept of integrative levels,[17] a number of serious errors occur. These errors stem from a tendency to concentrate exclusively on the continuity of development of matter from low to high levels. While the 'organicists' concentrate their attention exclusively on the uniqueness of the biological level ('the organism as a whole') without relating it to the lower levels, this tendency is preoccupied with the general similarity of organizational development in evolution to the exclusion of any consideration of the uniqueness of each level. This overemphasis of the continuity of evolution leads to the confusion of biological and sociological levels.

A. E. Emerson acknowledges the distinction between biological and social sciences but then says, 'Society is surely a manifestation of fundamental life attributes which are shared with other biological systems and the division between the social and non-social is not sharp.'[18] Elsewhere, he maintains that 'the evolution of human social and ethical characteristics is governed by the same forces which have been directing organismic evolution through the ages.'[19] However, the material in Emerson's articles reveals the basic difference between the forces making for change in human society and those producing changes in 'organismic evolution.' There has apparently been no important change in the society of insects in the thirty-five million years since the Oligocene period. Since insects possess neither intelligence nor the ability to transmit the results of experience to others, change is dependent on the slow process of germinal change (mutation) and their society is therefore relatively fixed. On the other hand, in the seven or eight thousand years of recorded history, man's society has continually changed; because of the transmission of experience symbolized by tools, language, printing, photography, etc., there is social-cultural inheritance as well as biological inheritance. It is the plasticity of man's intelligence which brings ethics into being.

While man's social relations have undergone marked transformation, his biology has remained essentially unchanged. What small biological change has occurred (*e.g.*, increased mean length of life) has been the result and not the cause of social development. The 'forces . . . governing . . . human social and ethical characteristics' have been not biological but social, the relation of man to changing technological and economic relations. The 'forces . . . governing . . .

[16] Ralph W. Gerard, 'Organic Freedom,' p. 425, in *Freedom, Its Meaning*, edited by R. N. Anshen. New York, 1940; *Scientific Monthly*, 50: 349, 1940.

[17] Biological Symposia, VIII. *Levels of integration in Biological and Social Sciences*, edited by R. Redfield. Lancaster, 1942.

[18] Alfred E. Emerson, 'Basic Comparisons of Human and Insect Societies,' p. 173, in Redfield, *op. cit.*

[19] Alfred E. Emerson. Abstract 21423, in *Biological Abstracts*, vol. 16, 1942.

organismic evolution through the ages' have been biological (mutation, etc.). That is why whatever similarities one notes in animal and human societies must be purely formal and therefore meaningless.

Gerard accepts the old analogy between society and the living organism and, by what Simpson has aptly described as the 'most reckless, unjustified, and nonscientific extrapolation,'[20] he draws a great many parallels between aspects of society and organisms. Thus, he equates scientists with receptors,[21] the formation of an army by a nation with the fusion of slime molds in the face of 'emergency conditions,'[22] altruism of men with 'service and mutual helpfulness seen in the interplay of cell nucleus and chloroplast,'[23] and so on. It is unnecessary to enumerate all the parallels. In every one of them, the social activities for which Gerard finds biological counterparts are not of biological origin but are the results of long processes of social development. We can not overlook the fact that the origin of social integrations of rational men in society is fundamentally distinct from that of biological integration of masses of protoplasm in the living organism. Aside from its refinement in terms of modern biological data, the organism-society analogy of Gerard is the same as that of Herbert Spencer in which, Needham has pointed out, instead of seeking the economic basis of social relations, he 'elaborates to a degree sometimes almost fantastic the analogy between animal and social organisms.'[24]

Just as the striking but fundamentally misleading analogy between living organisms and non-living engines has stimulated both mechanical and vitalistic biology, so this organism-society analogy leads to erroneous and dangerous social conclusions as well as to anthropomorphism.[25] Because he fails to distinguish the social from the biological, Gerard [26] is led to formulate a single principle to govern the entire historical process from the origin of molecules to the development of human society, the progressive growth of cooperation and altruism. By oversimplifying phenomena and divesting each level of organization, among organisms and in society, of its specific characteristic qualities, a metaphysical statement is produced, to the effect that society will inevitably—because it is an organism—progress toward a cooperative state. 'The ultimate future of society, however dark it may look to the contemporary sociologist or even to the historian, appears in the eyes of the biologist, sighting down the long perspective of organic evolution, as bright with hope.'

It should be remembered that even in the biological world, evolution is not always in the direction of progress—wit-

[20] George G. Simpson, *Journal of the Washington Academy of Sciences*, 31: 18, 1941.

[21] R. W. Gerard, 'Higher Levels of Integration,' p. 79, in Redfield, *op. cit.*

[22] *Idem*, 'Higher Levels of Integration,' p. 81.

[23] *Idem*, 'A Biological Basis for Ethics,' p. 108. *Philosophy of Science*, vol. 9, 1942.

[24] Joseph Needham, *The Modern Quarterly* (London), 1: 38, 1938.

[25] Needham, Huxley and Simpson have noted that even the formal aspect of the organism-society analogy is erroneous because it overlooks the fundamental differences between organism and society in: (1) the degree of concentration of consciousness in specialized parts, (2) the degree of differentiation arising during reproduction (of individuals in society and of cells in organisms), (3) the mode of reproduction and inheritance, and (4) the degree of subordination of individual parts to the whole.

[26] R. W. Gerard, 'Higher Levels of Integration,' pp. 83-85.

ness the 'regression' of the tapeworm. We can not afford to take refuge in Gerard's idea of a mysteriously operating 'organizing trend' [27] which will insure the steady march of progress for man's society. Such evolutionary fatalism is unsound science, and dangerous social advice for it leads only to inaction. Fortunately, the United Nations are not guided by such fatalism; they are relying not on any 'trend,' but on their armed might, in order to defeat fascism and keep society on the road of progress.

Despite occasional backward movements and many blind alleys, biological evolution has moved in the direction of progress—towards more and more highly integrated and efficient organisms in which there is an increasing independence of and control over the external environment. This is to be explained on the basis of phenomena such as genetic mutations and natural selection. We may agree that, despite more or less temporary setbacks, society will develop eventually to a high level of cooperation. But it will do so not because of 'organizing trends,' mutations or natural selection. Discussion of social evolution in terms of natural selection as it applies in the biological world is no more meaningful than metaphysics, for, as we have indicated, without a study of man's socio-economic relations, it is impossible either to explain the past history or to indicate the prospects for the future development of society. Progress in social development is basically different from progress in organic evolution; the latter does not involve conscious activity, the former, depending on scientific and technological advance, is the result of conscious activity of men and is directed by experience of life and study of history. Progress in organic evolution occurs without a set plan or direction; social progress rests upon planned activity of men. As Huxley says, human progress 'is not inevitable; man . . . must work and plan if he is to achieve further progress for himself and so for life.' [28]

Needham [29] has demonstrated that the most dangerous aspect of the reduction of social phenomena to the biological level, at the present historical moment, is the basis it provides for fascist 'philosophy.' The central point in this 'philosophy' is the thesis that man's biology decides his social behavior, and ruthless oppression of certain groups of people is justified because these groups are for all times fixed as 'inferior' by their biology. Gerard's view gives indirect support to this thesis, by making biological principles the guide for social thought and action.

A sharp separation of the two levels —biological and social—must precede a fruitful discussion of how man's society can be kept free and democratic. That discussion must be based on a study, by means appropriate to the level, of the social forces making for change. Only a scientific analysis of these forces will enable man to speed social progress.

It is perhaps not surprising that Gerard's one-sided view of evolution—which ignores the qualitative differences of successive levels of integration and the specific part-whole relationships in each —should lead him to embrace the concept of purpose.[30] The retarding influence of teleological thinking on the advance of biological science has already

[27] *Idem*, 'A Biological Basis for Ethics, p. 108.

[28] Julian Huxley, *Evolution, The Modern Synthesis*, p. 578. New York, 1942.

[29] Joseph Needham, foreword to Prenant, *Biology and Marxism*. New York, 1938.

[30] See references, note 16.

been referred to. Here we add our agreement with Huxley that any 'apparent purpose' in evolution is 'just as much a product of blind forces as is the falling of a stone to earth or the ebb and flow of the tides. It is we who have read purpose into evolution, as earlier men projected will and emotion into inorganic phenomena like storm or earthquake. If we wish to work towards a purpose for the future of man, we must formulate that purpose ourselves. Purposes in life are made, not found.' [31]

Conclusion

The concept of integrative levels describes the progress of evolution of the inanimate, animate and social worlds. It maintains that such progress is the result of forces which differ in each level and which can properly be described only by laws which are unique for each level. Since higher level phenomena always include phenomena at lower levels, one can not fully understand the higher levels without an understanding of the lower level phenomena as well. But a knowledge of the lower levels does not enable us to predict, *a priori,* what will occur at a higher level. Although some may have validity for the higher level, laws of a lower level are inadequate to describe the higher level. The laws unique to the higher level can be discovered by approaches appropriate to the particular level; to do otherwise is invalid scientifically and, in some instances, dangerous socially.

By stressing the material interrelationships of parts and whole and the qualitative uniqueness of each level of integration, the concept is of genuine help to biologists. Its dialectical approach avoids 'organicism,' 'fatalism' and mechanical 'atomism,' and helps attain a fuller understanding of such problems as the interrelations of cellular structure and metabolism, of cell and organism in ontogeny and in adult physiology, of individual and population biologies, of biological and social factors in the development of man's behavior; and the mechanisms responsible for organic evolution. By avoiding teleology, the concept aids the search for causes of biological phenomena.

The concept of integrative levels indicates to research biologists the crucial aspects of their problems, the solution of which puts the known facts into proper perspective by revealing the decisive element, the element imparting the uniqueness to the phenomena under study. It emphasizes the importance of studying the 'mesoforms,' matter at the point of transition from one level of organization to the next, so as to deepen our understanding of the unique qualities of the higher level. For example, it would indicate that an intensive study of the transition region between the chemical and biological levels, between protein and protoplasm, will help reveal the organizing relations unique to living matter and fundamental to vital activities.

As biologists become more familiar with the concept, a greater number will recognize its value both as an aid in the understanding of biological data already accumulated and as a reliable guide for research. Such recognition of its value will, however, be delayed by any presentation which creates the erroneous impression that it is metaphysical, teleological or mystical. This article has pointed to shortcomings in the presentation of the concept in some recent biological literature, with the hope that this may help make future references to the concept more reliable.

[31] Julian Huxley, *op. cit.*, p. 576.

THE SIGNIFICANCE OF PROBLEM-SOLVING BEHAVIOR

JANINA ADAMCZYK*

I

THE first and most important fact about human behavior is that there are no two persons in this world who are exactly alike, or who view things in precisely the same way. Conditions are different to different persons. A strong light in the street at night, for example, is a protection to a law-abiding citizen, and a danger to a criminal. A mouse which means food to a cat and a pest to an ordinary man is an object of scientific interest to the zoölogist.

Neither are physical objects anything 'in themselves.' A car in the hands of a drunkard is a deadly hazard. The same car in the hands of a physician speeding to a hospital may be an instrument of salvation. The difference is not inherent in the car itself, but in the purposes of the men operating their cars and the ways in which they use them. Each man sees his car in relation to his purpose—to his problem and he *sees it in his own way.* One cannot detect these differences merely by looking at the two men and the two cars. To understand what is involved in the two situations, the problem peculiar to each must be taken into consideration.

On the other hand, people are frequently unaware of many of their own purposes and often do not see clearly what their problems are. They usually have an 'idea,' a 'hunch,' and act on it. Very often this 'hunch' is no more than a simple feeling which cannot be accurately described. And thus, throughout life, from birth to his dying day each person solves, or attempts to solve his problems, succeeding or failing as he goes along. In every instance, consciously or unconsciously, from the level predominantly 'physical' to the level predominantly 'psychic,' to live at all, all living beings must solve at least some of the problems they encounter. These problems may be as simple as relieving the stress upon one leg by automatically shifting the weight of the body upon the other, or they may be as involved as solving a problem in mathematical physics. Whatever the problem is, simple or involved, verbalized or unverbalized, it provides a focus towards which human action is oriented at a particular time.

Let us now analyze the behavior of a person who is about to attend to some problem. The moment he defines it, or simply feels a certain need, he begins to look the situation over spontaneously, to analyze it, trying to see what means he might use to get his problem solved. If he cannot find anything he has used already in a similar situation, he will use things he never used before; he may try them in actual practice, or only in thought, until he selects some means available to him in the situation.

People differ greatly in the way they appraise or evaluate the means necessary

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for the solution of a problem. Some are hasty; they utilize the first thing that comes to hand; others survey the situation carefully, select the means of solution in relation to their problem, discard some, change others, decide upon a plan of action and put it in operation. No matter what action is taken, a result follows. The result may be a success, a failure, or a degree of either. Whatever the result may be, the person eventually discovers whether the means organized by him for the solution of the problem were adequate or not, and if necessary and possible, he may reorganize these means and possibly include others for another attempt at a solution.

Thus every person, more or less spontaneously and creatively, attends to the problem-solving without which daily living could not go on. Problem-solving, then, constitutes the basis of our 'intelligent' behavior, although this does not mean that such problem-solving may be considered 'intelligent' by others. In writing this paper, for instance, my action is 'intelligent' to *me.* I have delimited the problem for myself, have surveyed the situation, evaluated it in relation to the problem as I have seen it, created the means for its solution, made a plan and put it in operation. No matter whether I have succeeded or failed, I behaved intelligently from my own point of view, whether anyone besides me thinks so or not. The whole sequence of action makes sense to me.

II

When we analyze our problem-solving behavior still further another fact becomes apparent, namely, its subverbal character, which involves a high degree of extensional orientation. The extent to which we underestimate the subverbal process, namely, the extensional awareness involved in problem-solving and at the same time overvalue 'talking' is amazing. A young child depends almost wholly upon a process of observation and extensional evaluation of his problem situation because words have little meaning to him. No matter how fleeting his observations may be, and how little of it may be put in words, the experiences he goes through in his problem-solving contribute to his learning and give meaning to the world about him. The greater the variety of experience, the more spontaneous is the child's extensionality in seeing the relationships and in the utilization of the past experience in the solution of the new problem. His capacity to see relationships previously not perceived and in organizing goals hitherto unthought of also tends to be increased. The variety and extent of experience, much of which remains unverbalized, gives the person insight into the fact that problem-situations are never identical; that each successive problem, even though similar to others, requires new evaluation, new organization of means and plans. A person who acts upon this basis is considered as one having 'good judgment.' Although the bulk of the experience he employs seemingly finds little or no expression in observable action, it is included in some manner in such action as we actually observe.

Recognizing the process of spontaneous extensionality as basic in problem-solving behavior then gives an educator or a therapist a starting point in his work enabling him to deal fundamentally with the problems of human development. Having recognized problem-solving as inherent in human organization, he can originate the educative process by creating situations requiring spontaneous problem-solving on the part of those who participate in action. Such participation

helps to develop not only a recognition of the non-identity of problem situations, but also readiness to come to grips with them. Any person, having had a measure of experience in relatively successful problem-solving, gains courage to attempt the solution of other, more difficult problems. Instead of trying to appraise his powers by intense introspection thus dividing his attention between the problem-situation and his own preoccupation with himself, he focuses all attention upon the problem which faces him, while mobilizing spontaneously all powers at his command dealing with the problem.

Under such conditions a person might, and usually does, attempt to solve problems which he would seldom risk to undertake if he calculated his 'powers' *a priori*. In such a process he not only discovers 'powers' he never suspected in himself before, but also becomes more facile in evaluating the relationships involved in the problem-situation. It becomes a habit with him to delay the action until a relatively adequate evaluation has been made. Here again variety and extent of problem-solving experience results not only in quicker, but also more effective evaluations. The relationships within the problem-solving situation which before escaped notice tend to become obvious to the problem-solver. He becomes not only quick, but also creative.

III

To use problem-solving behavior as means of educational or therapeutic procedure is difficult, for educators tend habitually to superimpose the ready-made verbal answers upon their charges. And yet, there is little that confuses us more and that we resent more than the interference of another person with the spontaneous extensionality of our problem-solving, particularly when somebody tells us how a thing *should* be done. We do not like to work on tasks which are forced upon us when we ourselves do not see any challenge in the problem. Under such conditions we fail to see the point and we merely do what we are told when we must. There is no appeal in the fact that somebody else's plan and method might be better than ours; when we do not see how they relate to our goal, when we are unable to utilize our own evaluations and cannot be creative, we tend to hate it all. Often we quit the job because of these conditions, although we are not always fully aware of our reasons for doing so.

A child's play is a good medium for the observation of the effects of interference with spontaneous problem-solving behavior. A child may observe attentively an adult playing a game or executing a trick, and he may take explanations and suggestions. When, however, the child works by himself and the adult continues suggesting 'better' ways of doing a thing, the child often loses interest and turns to something else. An excellent example of the effects of such interference was observed during a game of basketball. The athletic director, eager to produce a 'good' team, began with giving minutely detailed instructions on the game. In his insistence upon meticulous play and his interference with their spontaneous play by showing them 'better' ways of throwing and passing the ball, he almost ruined the practice periods for the boys. Irritated as they were, the boys held their tempers during the practice, but when the instructor attempted the same method during the regular game, the outburst on the part of one boy was vigorous and unpleasant to the coach. What the instructor failed to understand was that the boy, functioning in a spontaneously developing situation, had to make his own extensional appraisal of the

development in a split second, his own play in relation to the total game as it progressed, evaluate it as a whole, decide upon the action and execute it, confining the whole process within possibly a second. The 'friendly' help of the instructor, being extraneous to the process as developed by the boy, created a blockage or confusion manifesting itself in 'emotional' behavior. Similar experiences continued over a longer period of time might result in behavior problems and serious damage to personality.

IV

It is important to note that interference with spontaneous behavior often takes a form of verbal instruction. This fact explains why the verbal interference creates frustrations, 'emotionality' and blockages of intelligent behavior even in a greater degree than mere 'physical' interference. That this should be so becomes apparent when we recognize the fact that verbal instructions, important as they may be, seldom give the facts a person needs for action. Car driving, playing a musical instrument, cannot be learned by means of verbal teaching alone. Experiences, *i.e.,* the facts extensionally and subverbally apprehended in the course of spontaneous problem-solving, give not only facts, but also relationships between facts which are seldom if ever included even in meaningful verbalizations.

Our too great eagerness to 'help' and to rely almost exclusively upon verbal teaching, significant because of the interference with the course of spontaneous problem-solving behavior, tends to be equally ineffective in classroom teaching as in the treatment of serious behavior problems. The following instance is offered as an illustration of the point. Three children were brought into a playroom in a settlement. They came from a very difficult home situation, the father being confined in a hospital for mental illness and the mother being greatly distracted by the husband's illness and by dire poverty. When brought by their mother the children stood together holding hands and looking anxiously about the room. Whenever anyone came near them they huddled together as if terror-stricken.

After a few attempts to include them in play, the teachers and the children left the three little girls to themselves. Words failed to pierce through their fear, indeed, seemed to aggravate it. For the greater part of the winter they came day after day and stood or sat near the wall seemingly doing nothing save watching other children at play. Early in spring when the children began approaching the little sisters again, they evoked no fear reactions; gradually the three little girls were playing happily with the other children.

After the initial effort to talk to children and thus include them in the playgroup, no word of coaxing or instruction came from the teachers. The failure was too striking to justify continuous effort. Only extremely fragmentary conversations were exchanged between the little sisters and the teacher and the other children. As the three children evaluated the situation, from one estimated as hostile and dangerous to one recognized as friendly, it was apparent to the observer that this shift occurred almost wholly at the subverbal level. While words failed utterly in effecting the desired change, continuous reconfiguration of the situation under changing conditions by the three children themselves helped them to reconstruct the whole situation from one dominated by unhappiness and withdrawal to one of happy participation. It seems significant that such reconstruction

of the situation carried with it not only a changed definition of the situation but also a change in behavior patterns of the children, for they seemingly did little but observe 'passively' what went on.

The roots of behavior lie deeply imbedded in such processes. No significant changes of 'character' occur unless a reconfiguration and revaluation has been effected. Sudden and seemingly inexplicable changes in behavior may be quite adequately accounted for by the processes of continuous re-evaluation of life situations. While most of these experiences are inaccessible to the ordinary observation and frequently are below the threshold of awareness, they nevertheless become a part of a new organization which finds expression in overt action different in pattern and at times startling in its seeming suddenness of change. What appears to be a sudden change is that point in the process of evaluation at which a certain incident has made an observer aware of the change which was going on at the subverbal strata of behavior.

V

Psychotherapy aims precisely at such reorganization, but it often tends to limit its approach to verbal methods. This seems to indicate an assumption that verbalization alone can be depended upon to bring a desired change. The limitation of such an assumption becomes apparent when one considers the complexity of problem-solving behavior. As we have seen, this requires not only verbal definition, but also insight into the subverbal behavior sequences developing within a pertinent frame of reference. Words alone fail to convey this adequately. This fact is recognized in the field of psycho-play-therapy of children in which verbalization is somewhat reduced and the spontaneous problem-solving behavior of play situations is utilized instead. Although a similar condition is present in the treatment of adults in the hospitals for the mentally ill where work, play and occupational therapy are used, its basic semantic, sociological, and therapeutic significance is rarely recognized.

It must not be imagined, however, that it is either advisable or possible to exclude 'talking' from our educational or re-educational work. The stress upon the subverbal aspects of behavior is necessary only because we overstress habitually its verbal aspects. We must not forget the fact that in actual living subverbal and verbal aspects are related significantly in the whole of intelligent behavior. The very meaning words have for us is derived from experience occurring at the silent or below the verbal level. The greater the variety and volume of such experience, the richer is the meaning the words have for us. If, in our work, we place principal stress on words and neglect creating opportunities for the subverbal aspects of experience which consist in functioning in a great variety of situations requiring creative, spontaneous problem-solving, we cut the educational ground from under our own feet. The function of educational leadership, then, is to provide rich opportunities for experience in untrammeled problem-solving, including both its verbal and subverbal aspects. Educational leadership must be so oriented in its method as to stimulate problem-solving behavior in such a manner as to preserve its spontaneity, flexibility, and creativeness.

VI

Although it is beyond the limits of this paper to go into the methodological discussion either of educational or of therapy problems, it is necessary to include some discussion of the effects which function-

ing as creative problem-solver has upon social orientation of groups and individuals. Just as words become more meaningful when derived from those substrata of experience occurring below verbal levels, so are the values, 'motivational' statements, more powerful in influencing behavior when they are abstracted in the course of actual problem-solving than when they are learned from verbal instruction alone. This is especially apparent in cases where the values derived from experience are in conflict with the values imparted by verbal teaching.

Such conflict was evident in the case of a boy whose early experience taught him to steal as another child might have been taught to work. When he started going to school he was told by his teachers that stealing was 'not the right thing to do.' It happened that this child stole ten boxes of crayons and was called upon to explain the theft. He said: 'I know it is a sin; I shouldn't have done it; I'll never do it again.' He recognized the social value verbally, yet the values he had learned verbally did not serve him as guides for his actions. When it came to actual behavior he did what he had learned to do at home from experience and from observation of his parents.

It is interesting to note that situations of this sort are usually accompanied by heightened 'emotion', and often we are led to assume that delinquent children and youth commit anti-social acts because they are 'emotionally unstable.' Yet, when we analyze the sequences of behavior more closely, we see that 'emotion' in this connection is a symptom rather than a cause. It is a symptom of confusion which grows out of the inability to bring the system of personal values abstracted from actual experience in which subverbal behavior has played a significant part together with the value-system of society. Under such conditions the system of personal values, the only thing that makes 'functional sense' to the person himself, and the system of social values which is recognized by him as 'right' contradict each other and cannot form a configuration in which the person can act as an effective and spontaneous problem-solver. Consequently 'emotionally' disturbed behavior appears. Fear of punishment may add to the confusion, but heightened 'emotion' is present where the fear of penalty is eliminated. Knowing better (verbally) and doing worse (in practice), is an experience familiar to adults as well as children, and brings grief to both.

VII

An educator in either the field of teaching or the field of re-education faces a difficult task, namely that of creating an educational method providing ample opportunities for the development of problem-solving behavior in relation to pertinent social frames of reference. It is necessary for the educator to recognize the fact that 'normal' behavior is oriented not only by the individually abstracted values, but also by socially recognized group values. Educators, must, therefore, bring the two into a functional relationship, that is, stimulate the recognition of all those socially recognized values which affect realistically the problem-solving behavior, and which the individuals and groups must include among the situational facts if their problem-solving is to be in harmony with social standards.

Simple as this statement appears to be, it is not easy to translate it into an educational program, as teachers and therapists well know. The difficulties which hinder its development are numerous, the most important of which seem to be the lack of consistency within our system of social values, the lack of

realization on the part of educators that establishing of functional, harmonious relationships between the personal and social values seems thus far the best method of developing 'normal' personality, and that such relationship is the result of total experience and not of verbal teaching alone.

To summarize: spontaneous extensional problem-solving behavior positively related to a pertinent social frame of reference tends to develop a 'normal' personality. It tends also to develop in persons more or less conscious recognition of non-identity of the situations constituting a continuously evolving process. For the same reason it tends to establish a habit of suspended judgment (delayed reaction) until an evaluation is made and as many facts and relationships as possible are taken into consideration, a process which of necessity, prevents hasty unintelligent action. Problem solving of this nature sensitizes a person to facts in a situation that are not obvious, and thus creates a willingness to accept the generally recognized standards of social behavior.

Interference with the individual's or group's spontaneous problem-solving behavior produces confusion, manifesting itself in behavior described usually as 'emotional,' 'delinquent' or even 'abnormal.' To be effective, re-educational processes involved in dealing with aberrations of behavior must include the re-establishing of spontaneous extensionality of problem-solving behavior.

Thus it would seem that, wherever we infer from perceptions, it is only structure that we can validly infer; and structure is what can be expressed by mathematical logic, which includes mathematics.
BERTRAND RUSSELL, *The Analysis of Matter*

◆

The organism is inexplicable without environment. Every characteristic of it has some relation to environmental factors. And particularly the organism as a whole, *i. e.*, the unity and order, the physiological differences, relations and harmonies between its parts, are entirely meaningless except in relation to an external world.
CHARLES M. CHILD, *Physiological Foundations of Behavior*

◆

. . . the patriotic archbishop of Canterbury, found it advisable—
'Found *what?*' said the Duck.
'Found *it*,' the Mouse replied, rather crossly: 'of course you know what "it" means.'
'I know what "it" means well enough, when *I* find a thing,' said the Duck: 'it's generally a frog, or a worm.' LEWIS CARROLL

◆

When you say that something is 'obvious,' it is quite as if you were to hit yourself on the head with a hammer . . . *You simply stop thinking* about that which you label 'obvious' the moment you so label it. WENDELL JOHNSON, *Language and Speech Hygiene*

GENERAL SEMANTICS IN THE CLASSROOM*

CHARLES I. GLICKSBERG[1]

THERE is no dearth of material dealing with general semantics, yet little experimental work in the field of educational methodology has been done.[2] The colleges have been far more enterprising in this respect. Whether or not semantics is formally incorporated into the body of the established curriculum, no teacher of English can do his job for any length of time without encountering questions and quandaries that call for the application of semantic methods. In short, teachers of English are semanticists without knowing it. They may be poor, hit-or-miss semanticists, but the point is that they can no more divorce general semantics from the study and use of language than they can separate the body from the mind.

Practically every English teacher must at some time or other have listened to, or even been involved in, classroom controversies based on poor logic as well as verbal confusion. I recall the case of a girl who argued—quite cogently, according to her definition—that there was no such thing as altruism. Why? Well, every action human beings performed was motivated by some form of selfishness. The philanthropist who donated a million dollars to charity was no more altruistic than the man who refused to give anything. The one who enlists in the Army is fundamentally as selfish as the one who stays at home; each one does what is 'good' for himself.

It was difficult to straighten out this tangled skein of categories. First of all, there was a mad mistake in logic. The student began with the initial assumption that 'all people are selfish.' By giving the same name to qualitatively different actions, she brought them under the deceptive rubric of identity and thus arrived at the amazing conclusion that Dr. Stockmann was no more altruistic than Al Capone.

The teacher tried the device of 'indexing.' Selfishness (1), the act (say) of a mother sacrificing herself economically for her son is equal to selfishness (2), the action of a person on a lifeboat drifting at sea who steals from the scanty provisions which are meant for the sustenance of all. Are these two the *same* thing? Are they equal? Suppose we call the first plus and the second minus. Can we make a true equation? Let us see: plus equals minus. It doesn't make sense. Is there, therefore, any warrant for calling

* Reprinted by permission from *The English Journal*, October, 1944.

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[2] See *Language in General Education: A Report of the Committee on the Function of English in General Education for the Commission on Secondary School Curriculum* (New York and London, 1940); and Holland D. Roberts, Walter V. Kaulfers, and Grayson N. Kefauver (eds.), *English for Social Living* (New York and London, 1943).

such radically different actions by the same loose term?

Such discussions almost invariably bring up the puzzling question: How did language first arise? How do names begin? How do words get the meaning they actually have? [3] While students usually find it interesting to listen to the various theories that attempt to explain how language probably arose in the remote past, it is wiser as a rule to avoid such high flights and stick more closely to the facts of the linguistic situation. What do we do when we talk? Language is not only a means; it is also definitely related to the life we lead, the ideas and attitudes we hold. It is an integral part of human behavior and must be studied as such. It is indispensable, among both primitive and modern man, for the facilitation of any kind of concerted human action. Speech has no meaning unless it is brought in relation to the practical activities that call it forth.

If the students can be led to accept this pragmatic conception of language, they can gradually be taught to interpret the meaning of each utterance not in isolation but within its context. If the word 'altruism' is placed within an actual social situation, it ceases to be a unitary and detached concept. It is an experience which we share, an action in time-and-place. From such empirical instances the world of concepts can be reconstructed, given a flesh-and-blood habitation as well as a name.

Those teachers who are still skeptical of the practical value of semantics should try to recall and reflect upon some of the searching questions, often highly metaphysical in nature, which students have had occasion to ask them. Unfamiliar with the postulate of symbolic logic—that it is illegitimate to ask a question for which there is no conceivable answer—they persist in the hunting of the snark. I recall some of the puzzling queries that students have addressed to me both privately, and in class: 'What is truth?' 'What is the best definition of love?' 'Does God exist?' 'What is race?' '"Beauty is truth, truth beauty"—what does this *really* mean?'

Each of these questions reveals a neglect of the basic principles of general semantics. Removed from their living context, the key terms are meaningless. There is no such universal abstraction as truth or race or God or love. For example, truth, like love, is a matter of degree. Bertrand Russell suggests that 'people who speak with reverence of the "Truth" would do better to speak about Fact. . . . .' [4] A working knowledge of how abstractions are born and operate within a given linguistic environment, as well as of their contextual roots and

[3] The reliance on the dictionary as the final arbiter of meaning, regardless of other important considerations, is being replaced by a more sensitive awareness of the functional role of context. Connotative nuances are born of the relation of the word to the rest of the passage in a given universe of discourse. The tone, the intention of the writer or speaker, must be borne steadily in mind if the full meaning is to be grasped. A promising step in this direction—an innovation that is bound to have fruitful educational implications—is being taken by Allen Walker Read, who is compiling a dictionary, based on semantic principles, which will emphasize context rather than etymology or fixity or meaning (see 'The Lexicographer and General Semantics, with a Plan for "A Semantic Guide to Current English,"' in *Papers from the Second American Congress on General Semantics*, ed. M. Kendig [Chicago, 1943], pp. 33-42; see also Charles I. Glicksberg, 'The Dynamics of Vocabulary-building,' *English Journal*, XXIX [March, 1940], 197-206).

[4] 'Philosophy of the Twentieth Century,' in *Twentieth Century Philosophy*, ed. Dagobert D. Runes (New York, 1943), p. 235.

ramifications, might have saved these students from tracking down the unicorn to its metaphysical lair. Consciousness of abstracting induces a realization not only of the multi-valued character of words but also of the relativity of values.

It is problems like these, coming unexpectedly out of the blue, which often prove more stimulating and educationally fruitful than formally prepared lessons on general semantics. With one senior class I spent more than two periods discussing the principles of semantics. The results were discouraging. I came away from the experience a chastened and a wiser man. Semantics cannot be 'discussed' and 'taught' by rote.[5]

After this fiasco of a lesson had been happily forgotten, the class one day became engaged in the discussion of the race problem. When is a man colored? Why, when his skin is colored. But there are many Negroes in the United States who 'pass' as white. What, then, is the percentage of colored blood that makes a man a Negro? Various states in the Union differ in their interpretation on this point. When this discussion was followed by the reading of the pamphlet entitled *The Races of Mankind,* the concept of 'race' as a fixed, unalterable, scientifically validated category was destroyed.

Another instance: one day last term a class was assigned the task of copying down the Bill of Rights. The student had to explain in his own words what each amendment to the Constitution meant and how it actually applied to the life we lead today. The forum that was held the next day was an illuminating experience both for the students and for the teacher. What started out as a Fourth of July celebration of our democratic ideals turned rather quickly and without the foresight or intention of the teacher[6] into an exercise in semantic discrimination. First of all, there was the reading difficulty: the problem of getting the plain meaning of the constitutional language. Then there was the even harder problem of determining how this meaning actually functioned, to what in their life it could possibly apply. They had come into class convinced that they knew what 'democracy' was. But some of the Negro students in the class proved a thorn in the side of the one hundred per cent patriots, whose loyalty was verbal rather than critical. One Negro girl wanted to know: 'What is democracy?' There was an embarrassed period of silence. Everyone thought he knew; no one could formulate it convincingly in the face of this skeptical challenge.

One lad finally hazarded the opinion that democracy means equal rights. From the rear of the room came the disconcerting Socratic query of the Negro girl: 'Equal rights for whom?' Again there was a tense silence; for this the students did know, this was part of their everyday experience: that the Negro was the victim of racial discrimination. One could almost read the perplexed state of their mind: if democracy did not grant equality of opportunity to all people, if it discriminated against one-tenth of the population, then what did 'democracy' mean? Hitherto it had seemed to possess a concrete, definite, and assured meaning; now it had become bafflingly complex, a bundle of contradictions, a problem to be thought and lived through rather than a formal idea to be accepted on faith. Obviously, the social reality did not correspond with

[5] The class had been assigned to read the essay, 'The Tyranny of Words,' by Stuart Chase, in *Panorama,* ed. Harold T. Eaton (New York and Chicago, 1940).

[6] The forum was led by a student chairman.

the picture in their minds. This did not mean, as was pointed out, that democracy as a whole had failed; it simply indicated that democracy was an unfinished business, that, like every precious ideal, it must constantly be striven for, redefined, repossessed.

During the same session another lad declared with conviction that in the United States, as compared with Germany, you could say anything you pleased, without fear of punishment. By this time the class was in no mood for verbal evasions. A number of dissenting voices charged that this was nonsense. No one could say *anything* he pleased. Certain expressions in our society—in practically every society—are taboo. Who, for example, reveals everything that is in his mind? Much in the course of a conversation is left unspoken, and it is well for social accommodation that it is so. 'Free' speech is free within limits. The significance of what is said depends on when it is said, to whom, for what purpose, in what social context. 'When you call me that, smile,' said the Virginian, who was a semanticist of sorts.

For students to feel the power of verbal magic they must, first of all, be subjected to it and, second, practice it themselves. What's in a name? Logically it should make no difference by what name a person or a political party is designated; actually it makes a very great difference. The Communists—the most active, the most ingenious, if not always the most successful, propagandists—have at last been forced to take cognizance of the intense antagonism the name of their party evokes on the part of many Americans. There is more than meets the eye in the proposal of the Young Communist League to change its name and concentrate on the more immediate aim of winning the war and destroying fascism.[7] Consider, too, the recent sensational announcement by the Soviet authorities that the Comintern had been liquidated. Immediately, the Communist party of the United States decided upon its own dissolution and presided at its own interment. Mr. Earl Browder, secretary of the Communist party in the United States, made it known that 'the bogey of Communism' had been laid.

The essence of verbal magic, according to Bronislaw Malinowski, who studied the magic formulas and beliefs of the Trobriand Islanders, 'consists in a statement which is untrue, which stands in direct opposition to the context of reality.'[8] Language thus has a double function: the magical and the pragmatic. The evil spirits residing in names still ride us hard. Though our civilization is ostensibly under the control of scientific reason, actually the mass of people are more influenced by verbal magic than by rigorous methods of critical inquiry. The symbol is personified. Everywhere people are more concerned to combat the 'menace' of 'bad' substantives than the reality to which presumably they refer.

What clinched the lesson on verbal magic was the effort the students themselves made to compose political oratory which sounded impressive but which had little relation to reality. Most of the students capitalized on their own political beliefs. These were the heart of reality, the quintessence of truth. The New Deal, for example, meant 'salvation for the common man, justice for the people, the perpetuation of democracy in its true sense, the building of Jerusalem in the United States.' But it could also be twisted to mean 'bureaucratic regimentation,'

[7] *New York Times*, September 11, 1943.

[8] *Coral Gardens and Their Magic* (New York and Cincinnati, 1935), II, 239.

'tyranny,' 'fascism' [9]—all 'bad' names.

The more difficult assignment was to teach the class the necessity of pragmatically testing each statement by the method of applying it to concrete instances.[10] If the New Deal was a form of fascism, then the thing to do is to dissociate the abstraction into the component parts and examine each one of these by applying it to a given situation. How does it work out in practice? How does it affect the student personally, his family, his social relations, his community?

The other point that had to be made clear to the class was that facts to be properly interpreted must be situated in the context of time. Facts, because they occur in time, must be 'dated.' Smith in 1910 is not the same Smith of 1944. Communism in Russia or the United States in 1944 is not the same communism that prevailed in either country in 1934. The New Deal of the thirties must be distinguished from the New Deal of 1944.

The realization that words can be used to throw up a meaningless smoke screen was one the students did not readily forget. They were delighted with the success they achieved in ringing changes on sacred abstractions. Like Humpty Dumpty they came to the startling conclusion: 'When I use a word, it means just what I choose it to mean—neither more nor less.' Some students, to be sure, were more successful in performing these exercises than others.

In the teaching of general semantics, whether or not it is called by that name, it is necessary to establish 'rapport' with the students before any definite beneficial results can be secured. Before the student can be helped, the teacher must somehow manage to 'get under his skin.' In short, any constructive educational influence must be organismic, not verbal. It is difficult, however, to determine whether the learned response functions on an organismic or on a verbal level. The student sets down in words what he feels and believes, but there is as yet no educational method of determining whether his pattern of behavior has been modified.

The prime motor of semantics as an educational method is that it can act as a counterbalance to the predominant intellectualism of our times. Organic experience is the basis of learning. What is known is lived through, and it is known precisely because it has been lived through. Semantics can be 'taught' without ever mentioning the name. It is efficacious because it makes possible an extensive system of self-education. Occasional exercises in semantic analysis will not of themselves carry over into behavior, but they may in time help the personality escape from the prison of stereotypes. If applied to vital contemporary issues, such exercises should demonstrate clearly the *relativity of meaning* in language. No word has a fixed, final, binding meaning. What it means to the reader or listener depends upon a number of complex things: the past history of the reader or listener, the emotional coloring of the context, the pressure and collaboration of neighboring words, the directing purpose of the writer or speaker. Each one of us accepts a number of presuppositions which are absolutes, the assumptions of which are not susceptible of definition. In addition, such exercises

[9] One student, with a great thrill of excitement, brought in a clipping from the *New York Times* of June 28, 1944, headed 'New Deal Labeled "Fascism" by Martin.'

[10] In his *Problems of Mind and Matter* (Cambridge, 1934), John Wisdom gives this as one of his central precepts: *'To ascertain the truth of a general statement apply it in all sorts of particular instances'* (p. 55).

can demonstrate not only what abstractions are but how they influence the burden of meaning, how they can be twisted to serve different purposes, how dangerous they are when not checked by semantic methods. People can be oppressed in the name of 'Freedom.'

This is not to imply that we live completely in a world of fictions, that words are shadows which bear no correspondence to reality, that we must forever remain blind and deluded in a cave of projected images. It is the realm of observed facts that constitutes our base of operations, our arbiter of 'truth.'

Until semantics becomes institutionalized and forms part of our mental habits, English teachers would do well to experiment with semantic methods whenever the occasion calls for such treatment. High-school classes are not, as a rule, ripe for technical discussions of 'theory.' What students want is what they can use to advantage. If semantics can help to clarify their thoughts, facilitate their thinking, and make their discourse more smooth, precise, and expressive, it will achieve more than if we had given them a minutely outlined course on the subject. Here are some of the 'principles' the alert and enterprising teacher can bring to bear on issues that arise in the classroom:

a) Language is like a map; it should take us most expeditiously to the place where we are going. The map should prove a faithful guide to the territory of experience. Language, of course, has other uses: the emotional, the evocative, the mystical, the magical.

b) The statement of 'allness,' like the belief that life can be explained by propositions which are either true or false, should be regarded as a danger signal. Most statements of fact possess a weighted measure of probability. They correspond more or less to the reality they attempt to describe. The question of 'truth' is thus a matter of discovering the degree of probability of any warranted assertion.

c) As important as the consideration of 'allness' is the realization that words mean what we make them mean and that it is the context, written or social, which furnishes the clue of meaning.

d) If students are to write well, it is essential that we make clear to them the purpose for which communication is to be established. All expression has a communicative purpose. Without this purpose it grows artificial and ineffective. Writing for the sake of writing does not belong in the classroom.[11]

e) The habit of indexing and of 'dating' is of decided value. Here is the remedy for the vice of abstraction which is the bottomless pit into which many adolescent minds fall; and the memory of that traumatic 'fall' remains with them and influences their thinking and behavior for the rest of their lives. Two-valued generalizations, universal 'laws,' finalistic statements, categorical dogmas —these are caused by failure to use the indexing method and by disregard of the structure of language.

If the argument is advanced [12] that the English curriculum is already so top-heavy that it cannot find room for new methods and materials, the semanticist has no reply to make except to say that he is not interested in departmental divisions. His primary concern is with the organism of the student, and that organism cuts across all curricular boundary

[11] For a vigorous presentation of this thesis see Wendell Johnson, 'You Can't Write Writing,' *ETC.*, I (August, 1943), 25-32.

[12] For a sharply critical evaluation of general semantics and its place in the English curriculum see *The Training of Secondary School Teachers* (Cambridge, Mass., 1942), pp. 72-74.

lines. General semantics is more interested in the analysis of meanings within determinate contexts than in the formal study of grammar. Meaning is what counts. There is no ground for assuming that the study of semantics will lead students to believe that formal knowledge is needless. Semanticists have been explicit on this point: there is no substitute for the mastery of subject matter. Those who fear, as does the committee that prepared the report on *The Training of Secondary School Teachers*, that semantics may create an opening for the intrusion of special interests are guilty of conjuring up a phantom. There is no antagonism, no incompatibility, between English and general semantics. English, being a language, is part of semantics. The only question at issue is which method of study will pay the highest dividends—for the student.

If he contend, as sometimes he will contend, that he has defined all his terms and proved all his propositions, then either he is a performer of logical miracles or he is an ass; and, as you know, logical miracles are impossible.

CASSIUS J. KEYSER, *Mathematical Philosophy*

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Now I claim that the Ethnographer's perspective is the one relevant and real for the formation of fundamental linguistic conceptions and for the study of the life of languages, whereas the Philologist's point of view is fictitious and irrelevant. . . . To define Meaning, to explain the essential grammatical and lexical characters of language on the material furnished by the study of dead languages, is nothing short of preposterous in the light of our argument.

B. MALINOWSKI, 'The Problem of Meaning in Primitive Languages' (supplement to *The Meaning of Meaning*, by Ogden and Richards).

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That wretched monosyllable 'all' has caused mathematicians more trouble than all the rest of the dictionary.

E. T. BELL, *The Queen of the Sciences*

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Language . . . carries the past along with it in an extraordinary way, and the errors of the past repeat themselves because of this fact.

WILLIAM ALANSON WHITE

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It is not generally recognized that the more we define our terms the less descriptive they become and the more difficulty we have in using them. THURMAN W. ARNOLD, *The Folklore of Capitalism*

THE SOCIAL FUNCTIONS OF LANGUAGE

GEORGE C. BARKER *

A POPULAR young evangelist once told me that in addressing revival meetings in a slum district of a large city he always used 'the worst grammar' of which he was capable. He knew that had he used 'good English' he could not have put himself over with his audience. His choice of appropriate speech forms illustrates one of a series of basic relationships of language to human social life. These relationships, long implicitly recognized but only recently utilized in social research, may be described as the social functions of language.

I

By social functions of language is meant the ways in which the language spoken by a group of people is related to that group's social position and organization. To clarify this sociological view of language, we should distinguish it at the outset of this paper from the older psychological approach which sought to determine the relation between language and thought. According to this older view, the main function of language was to express or communicate 'mental content.' The assumptions involved in this earlier view were that language was simply a vehicle for the expression and transmission of 'ideas' and that its function was merely technical in the 'mental life' and 'material culture' of the group. Until the beginning of the present century this view was widely held by social theorists, who took correspondingly little interest in language as a source of data on social organization.

The beginnings of interest in the social functions of language may be traced to several sources. One, of course, was the science of linguistics, whose pioneer workers were impressed by the relation of speech forms to class status and prestige. Another was the early field work of Morgan and others in anthropology, which indicated significant relationships between kinship nomenclature and social usages. Another source was the group of French sociologists headed by Emile Durkheim, whose theory of collective representations aroused interest in the categories of a language as determinants in social behavior.[1] More recently, research in the sociology of knowledge has shown interesting relationships between word-meanings and the various social groups using these words.[2]

Interest in language as sociological data also arose through the behaviorist school of psychology. Basing their theo-

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[1] Numerals refer to notes and references at end of paper.

ries on the observation of animal and human actions, the early behaviorists claimed that 'thought' was merely subvocal speech. This view, so diametrically opposed to that of mentalistic psychology, led to renewed interest on the part of social psychologists in the study of language behavior. Gradually, through observational studies of animal groups, children's groups, and pre-literate or 'primitive' societies, a new attitude toward language began to develop. One of the landmarks in this development was the work of Grace de Laguna, who held that human speech was an outgrowth of animal cries, and functioned originally to coördinate the activity of the group.[3] Malinowski took a similar view in his analysis of the language behavior of the Trobriand Islanders: to the Trobriand native, language is a definite part of ritual activity, and often is the equivalent of action.[4] Finally, the study of children's groups led Piaget,[5] George H. Mead[6] and others to focus attention on the child's use of language as a process of socialization, whereby he achieves reflective thinking through taking the role of others in his speech behavior.[7]

To Mead, Dewey,[8] and other social behaviorists, language was an integral part of the total behavior of the organism. The implications of this view to social science were profound, since it meant that much which had previously been relegated to the introspective psychologist as 'mental life' was now open to observation and analysis. The older behaviorism had been limited to descriptions of overt behavior below the verbal level. Now, with the new approach to speech, the entire field of symbolic behavior was made available for systematic investigation. Whereas the older behaviorism had tended to describe human behavior as an aspect of animal behavior, the new viewpoint brought out striking differences. These differences, as indicated by Mead, Korzybski, Leslie A. White,[8a] and others, hinged on the function of the symbol or sign in human and animal life. While many animal groups coördinate their activities by means of vocal signs, such cries have no significance apart from the context of the immediate situation. Human beings, on the contrary, are conscious of the function of signs as symbols, and need not react automatically to them. In Mead's terminology, animals can react to symbols but not to significant symbols.[9] In Korzybski's terminology, animals have signal reactions, but only humans have symbol (fully flexible) reactions.[10] Both writers have emphasized the importance of this point in the understanding of human culture. By the same token, an understanding of the role of the symbol is critical to any study of the social functions of language.

The term 'symbol' is used in this paper in the sense of an arbitrary sign established by social usage to stand for something. It is thus to be distinguished from the non-symbolic 'sign' made by an animal. A sign cannot be understood apart from its accompanying situation. A symbol can be understood in any situation, provided its usage in a universe of discourse is known. By 'universe of discourse' is meant not merely the verbal context of a symbol but the whole system of assumptions and connotations associated with the language of individuals within a given social group. As long as speaker and hearer are within the framework of a given group and its accompanying universe of discourse, they will have little trouble in understanding the symbols they use. But as Karl Mannheim points out, trouble arises when speakers of different social positions and correspondingly different universes of dis-

course attempt to understand each other's symbols in terms only of their own frames of reference.[11] The frequency of such misunderstandings offers interesting testimony of the extent to which symbols are taken for granted in their function of coördinating group activity. Only when a person attempts to communicate with someone outside of his own universe of discourse does he stand in a position to see how the symbols he uses are adapted to the social life of his group.

II

While the coördination of group activity now is widely accepted as a basic social function of language, little attempt has been made to establish a systematic classification covering the whole field of such social functions. Perhaps the closest approach to such a classification was made by Sapir, who suggested that in addition to the general functions of language in the spheres of thought, communication and expression, there are a number of 'special derivations.' Most of these may be considered as social functions of language, and are outlined as follows:

1. Language as a form of socialization. This would include the service of communication between members of a group, the service of a common dialect or subform of language as a symbol of social solidarity, and the service of establishing rapport between members of a physical group.

2. Language as a culture-preserving instrument, whereby cultural forms are transmitted from generation to generation.

3. Language as a factor in the growth of individuality, or development of social personality.

4. Language as a declaration of the psychological place held by the various members of the group.[12]

Sapir emphasized the importance of what he called the 'expressive' aspect of language in the social life of the group. His third category, above, refers to the way in which an individual's language habits, or manner of speaking, helps to identify him as a distinct personality in the group, while the fourth category refers to the way in which the individual's manner of speaking reflects an attitude of dominance, equality or subordination with respect to other members of the group.

One other pioneer effort to classify the social functions of language was made by McGranahan in a paper on 'The Psychology of Language.' Reviewing the 'social uses' of language, he outlined three: (1) the coördination of activity, (2) the transmission of culture, and (3) the determination of national individuality.[13] All three are included in Sapir's first two categories, above, and so need not be discussed here. McGranahan concluded his survey with a list of what he called 'social misuses' of language. These are: (1) word magic, the false identification of words with objects; (2) illogical persuasion, the use of sacred or emotionally charged words in place of logic in argument; (3) the substance fallacy, the notion that where there is a word, there must be an actual substance or condition which corresponds to that word; and (4) verbal nonsense, the use of terms in such a way that they function merely as 'meaningless noises.' These and other social misuses of language are treated more elaborately in current works dealing with semantics, notably the volumes by Korzybski,[14] Chase,[15] Hayakawa,[16] and Lee.[17] It is not within the scope of this paper to enter into a discussion of these misuses, except to point out their general re-

lationship to the present field of inquiry. Morris has outlined this relationship in a discussion of semiosis, the 'science of signs.' He divides this science into three sections: syntactics, the study of language structure; semantics, the empirical study of the relation of signs to objects; and pragmatics, the investigation of language as a type of communicative activity, social in origin and nature.[18] By 'semantics' Morris refers to the traditional use of the term,[19] which should be distinguished from the theory of 'general semantics' formulated by Korzybski. While it probably is true that any study of language touches in some degree all three of Morris' subdivisions, the present study of the social functions of language may be characterized as centering in the field of pragmatics.

In addition to the classifications of Sapir and McGranahan, mentioned above, many pertinent observations and suggestions as to the social functions of language have been made by different scientists in a more informal way, and it may be well to review some of these suggestions at this point in our discussion.

Malinowski has recognized a functional difference between language as a part of action and language as 'phatic communion,' engaged in simply as a social amenity.[20] The term 'phatic communion' is approximately equivalent to Sapir's 'establishment of rapport,' and also is paralled by John Dewey's term 'consummatory,'[21] or language spoken as an end in itself. Like Malinowski, Dewey uses this term in opposition to the active, referential function of language, which he calls 'instrumental.' Hayakawa recognizes a similar distinction with his 'presymbolic' and 'symbolic' types of language.[22]

The function of language in indicating status relationships has been noted by many students of linguistics. Bloomfield points out that what is called 'good' and 'bad' grammar may be more accurately described as 'standard' and 'substandard,' the former being the particular form enjoying social prestige.[23] Schlauch's recent book contains an interesting discussion of class dialects in relation to common and polite speech forms.[24] An earlier work by Vendryes draws attention to what he calls 'special languages'—languages employed only by groups of individuals placed in special circumstances. Examples are the language of the law, ecclesiastical language, criminal argots, and all forms of slang. Such languages, according to Vendryes, are the result of social divisions and draw sustenance from the common language of the larger social group.[25]

III

The above attempts to describe and classify the social functions of language may be re-grouped under two main social functions. The first of these is the function of language in defining the group as a group. For convenience, we may call this the group-defining function. Sapir's description of language as a socializing force and as a culture-preserving instrument comes under this heading as do all three of McGranahan's social uses. The common language coördinates the activities of the group, makes individuals conscious of their membership, sets up an in-group-out-group relationship between members and strangers, and enables the group to retain its distinctive characteristics over many generations.

The second main social function of language is to define social relations within the group. This may be referred to as the group-relating function. Under this heading come Sapir's last two points —language as a factor in social person-

ality and as a declaration of the individual's psychological place in the group—Schlauch's class dialects and Vendryes' special languages. Thus language may reflect both the social structure of a society and the relation of the individual to that structure.

The group-defining function of language seems to be as old as human culture itself, and may be considered in three aspects: the coördination of group activity, the symbolizing of group membership, and the transmission of patterns of thought and behavior. From studies of the higher apes, it appears evident that the first and basic function of the human voice was not the communication of ideas but rather the coördination of activity. When an animal cries out on suddenly glimpsing an enemy, he does so not with the conscious 'intention' of arousing his group but rather because his response is part of a pattern which has led to his survival in similar crises in the past. In the same way, the group has become 'conditioned' to respond to his outcry as if each member had experienced the original stimulus—the sight of the enemy—and accordingly the group can react to the foe as a unit. With human beings, of course, such signals have been developed into symbols, but the original function of the voice in coördinating activity still continues below the symbolic level, whether the occasion is a football game or a session of parliament.

In many societies which are regarded as 'primitive' according to western standards, the language of a speaker serves to identify him as a member or non-member of the society. This is equally true of modern nations and the cultural subgroups within them. In the United States, for example, no matter how closely an immigrant may conform to standards of dress and conduct, he will always be looked upon as something of a foreigner as long as he retains a trace of 'foreign' accent. Similarly, children's groups develop mannerisms in slang which a new child in the neighborhood must adopt if he expects to be one of them.

The role of language in transmitting patterns of thought and behavior is perhaps the most important of all its group-defining functions. Only through language can the mores and folkways which distinguish a particular culture be passed on from one generation to the next. It is true that children may learn many of the mannerisms of their elders by observation and imitation, but the meaning of social behavior can only be transmitted by language. For example, no amount of observation alone can give a European onlooker an understanding of American football. To follow the game intelligently he must know the rules, which cannot be formulated without language. Another illustration of this role of language is the indoctrination of children in the ideology of patriotism. Through such devices as the pledge of allegiance, the national anthem, and stories of national heroes, the child comes to recognize the national group as a concrete reality. This elaborate symbol-system, built up through language, is at the core of modern nationalism.

The second main social function of language—the group-relating function—may be considered under two aspects: the defining of relations between groups, and the relating of the individual to the group. As an example of the first of these aspects, we may cite the use, in many parts of the world, of deferential forms of address to indicate lines of class or caste. Thus in the Deep South of the United States the custom of calling Negroes by their first names is widely observed among Whites, even in cases

where they may never before have seen the Negro so addressed. The custom 'defines' the traditional relationship between the White and Negro castes.

In regard to the second aspect—the relating of the individual to the group—the key part played by language in the socialization of the child has been shown by many studies. Through language, the child is able to take the role of others (parents, teachers, older brothers and sisters, etc.) in his play behavior and thus develops an understanding of his own social role in the community. His own manner of speaking, in turn, becomes an important part of what the community recognizes as his social personality, and helps to determine his social position in the group.

IV

The above suggested classification[26] of the social functions of language is tentative and can be tested only through application to social situations. As a research tool, it may be useful along two lines: (1) in understanding group organization and behavior, and (2) in helping to define the social position, attitudes and values of individuals and sub-groups within the larger community. The classification would seem to lend itself particularly to studies in assimilation and acculturation, since in these fields an investigation of the ethnic group's usage of both the ancestral and adopted languages might well offer fresh insights as to the character and extent of the social adaptation involved.

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Finally, in semantic aphasia, the full significance of words and phrases is lost. Separately, each work or each detail of a drawing can be understood, but the general significance escapes; an act is executed upon command, though the purpose of it is not understood. Reading and writing are possible as well as numeration, the correct use of numbers; but the appreciation of arithmetical processes is defective. . . . A general conception cannot be formulated, but details can be enumerated.

HENRI PIÉRON, *Thought and the Brain*

The views of space and time which I wish to lay before you have sprung from the soil of experimental physics, and therein lies their strength. They are radical. Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality.

H. MINKOWSKI

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The Dormouse . . . went on: '—that begins with an M, such as mousetraps, and the moon, and memory, and muchness—you know you say things are "much of a muchness"—did you ever see such a thing as a drawing of a muchness!'

'Really, now you ask me,' said Alice, very much confused, 'I don't think—'

'Then you shouldn't talk,' said the Hatter.

LEWIS CARROLL, *Alice in Wonderland*.

✡ DISCUSSION ✡

*PERHAPS THEY'RE JUST EXTENSIONAL**

SAMUEL GRAFTON

What Kind of 'Oriental'?

We must learn to understand Russia, and one way to understand how the modern Russian mind works is to try to understand the great Russian offensive. One military thinker has let drop the comment that there may be something 'Oriental' about Russian battle psychology, a word which brings up images of hordes of faceless men, plodding forward in disregard of death; winning as ants do, by force of numbers.

But, as someone once said, when the word 'Oriental' is used, it is well to specify what kind of Oriental one means. Does one mean Oriental, like the pacific Chinese, or Oriental, like the Indians, who also hate war, or Oriental like the Filipinos, with whom we rejoice this week, or Oriental like the Japanese? No, this is that special kind of Oriental whom one invents when one needs an Oriental in his argument.

No Racial Explanation

The success of the Russian offensive is mystifying to the West; but no racial explanation will account for it. If the Russians are Oriental, they were just as Oriental in the last war, when they did poorly. Russian success is based on the boldest kind of realistic military thinking, which has shown itself in a long line of innovations, starting with the invention of the winter offensive.

To make friends with winter, as the Russians have done for three years, is a conception representing a departure from centuries of military theory. It must have started with somebody in the Kremlin saying to somebody else in the Kremlin: 'Say, is it really impossible to fight during the months between October and May?' Somebody perhaps made a little list, of what's good and what's bad about winter. It's cold, of course, but then also rivers freeze over, and you don't need so many bridges.

Volney Hurd, in the *Christian Science Monitor,* has traced the ensuing developments: 'Ski troops and sledges, fast moving cavalry, white-clad soldiers . . . special lubricants to operate in below-zero weather.' The logical climax came when the Russians actually launched one of their major pushes during a blizzard; they did it because it is so notoriously hard to fight during a blizzard; hard, that is, for those who have never looked at a blizzard with a fresh eye.

Mr. Hurd goes on to account for these innovations on the ground that Russia's

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generals are ex-peasants, accustomed to winter and rough weather. As always, these semimystical explanations do not satisfy; Russia's peasants froze their ears for centuries without winning anything.

Night and Day Forces

Again and again one has the feeling that some Russian, high up, has looked at something old and familiar with a fresh eye. *Pravda,* on Jan. 24, told of 'a large enemy tank force' which tried to stop the advance of Soviet troops. 'The Russian command,' says *Pravda,* 'made a daring decision: To strike at the enemy, force a way through his dispositions, and leave it to the second echelon troops to conclude the battle.' The Soviet advance forces broke through and went on about their business, leaving the German tanks to fight a hot, but irrelevant, battle in the rear.

Another Russian development has been the use of separate forces to give battle by day and by night on the same front; one section fighting while the other rests; and both working against German troops not geared for a two-shift operation. This is waging war by factory methods, and again, one has the uncanny sense that some Russian thought about the dark familiar night, in a fresh way.

Overriding all these conceptions has been the Soviet use of the long front, compelling all the Germans to fight against all the Russians, and since there are more Russians, the advantage is clear. It is an advantage not obtained in local battle or in limited operations. We Americans have always been proud of our own fresh view of old things; it seems to me that along this line we can make a beginning toward understanding the new Russian mind. We shall not understand it at all on the basis of seedy racial theory.

REDUCING RESISTANCES TO GENERAL SEMANTICS

LEON K. WHITNEY*

IT IS MY opinion that much of what has been written or spoken on the subject falls short of its communicative destination because of resistance, or blockages, in the nervous systems of the students for whom it is intended. This judgment has four bases. First, I have experienced resistances myself. My first contact with general semantics came several years ago, not long after Korzybski's first seminar, through an extended conversation; a short time later I was a member of an audience to which the subject was being introduced. I tried to read some of the literature then appearing to see if I could find out what it was about. My blockages became so severe that I vowed never to have anything to do with the stuff, and I made good on the vow until less than a year ago. I think I can secure witnesses that I am not strongly given to prejudices —that such resistance is not in keeping with my usual reactions.

Second, I have been in several audiences in which people were receiving their first introduction to the subject. Resistance was frequent. Nearly all members displayed some degree of resistance ranging all the way from mild skepticism to angry disbelief.

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Third, in preparation for this paper I talked with people who had moved beyond the period of resistance into a more or less complete acceptance of its principles. I found that each had had his periods of skepticism or confusion—periods during which desired communication was not taking place.

Fourth, experts in the field refer freely to the existence of blockages. I am sure that I need not press the point that resistance to the presentation of general semantics is frequent, and sometimes intense.

Such resistance is not the *desired* response. It should be possible to write and speak about the subject in such ways that reactions in students are the kind that instructors desire. It is my judgment that the methods of instruction, more than the principles of general semantics, stir the resistances. I shall attempt to analyze the instruction to the end of locating resistance-stirring elements. I write in the interests of better communicative receptiveness. I must be extremely careful in my approach, for I, a novice in general semantics, am attempting to analyze the methods of presentation employed by those who have bored their intellectual ways to the very heart of the subject.[1] I do not direct my criticism to any one, or even a few, of the writers and speakers. If I did not believe them applicable to almost all the written and spoken material on the subject I should not write.

If I am to show that resistance grows out of the instruction I must recognize first that people are inclined to resist anything that is new, or anything that demands alteration of established patterns of belief or action. We must expect resistance to general semantics from each source. Yet if we are to be consistent with process-facts we *must* not assign those as *the* causes. Even if they were *the* causes, however, the instructor interested in communication would be obliged to adjust his instruction to fit the situation. In public speaking terms a student with these reactions is a *hostile audience*, and imposes on the instructor the necessity of finding methods of instruction to which one for whom the subject is new, or one for whom it means revision of beliefs, attitudes, and actions will respond with a minimum of resistance.

There are a good many instructional *devices* that seem to have become more or less standardized among writers and speakers on general semantics. Some of these have a high batting average for stirring blockages, according to my observations and interviews. I shall attempt to classify the common blockages and the instructional devices that arouse them sufficiently to indicate their types so that they may be eliminated from instruction.

The first type of blockage is, 'I don't believe it,' or 'The guy's crazy.' That type of reaction seems to be fairly constant to certain instructional devices which I shall call *hair-splitting techniques*. An example: 'An apple is not an apple; rather there is apple one, apple two, etc.' I saw an entire speech conference thrown into turmoil by that one. 'Two separate gallons of water are not really two full gallons when poured together, for there is slight evaporation, and some of the water adheres to the walls of the emptied container,' is one to rely on to secure blockages among new students. I have found others with reactions similar to mine when I first read, 'If in doubt, you might try eating the word *steak* when hungry, or wearing the word *coat* when cold.'[2] I could not but think that some-

[1] [Editor's note: Whaddya mean, 'bored'?]

[2] *Language Habits in Human Affairs*, Lee, p. 16.

body was stretching the point a bit—that a writer would be crazy to think that anyone would not have more intelligence than to think the *words* were eatable or wearable.

According to my memory of my blockages, and my findings from inquiries, the instructor is going to unnecessary (hair-splitting) degrees to make his point. The *point* is slower in becoming clear because of the, to the student, absurdity of the instructional device. He cannot imagine anyone trying to eat the word *steak*, least of all himself.

The use of hair-splitting techniques, to one who does not understand or accept the principles involved, has this element of being a personal affront. The *beginnings* of instruction must start at an impersonal distance from the student's beliefs. It would seem to me that Hayakawa, page 52 of *Language In Action*, would do better to start with the observable (to the student, acceptable) differences in Bessie the cow and Brindle the cow, then Nellie the horse, as well as Bessie as a calf, than to begin with the (to the student, hair-splitting) method difficult for the student to visualize. My first reaction to Korzybski's Chicago, San Francisco, New York map, *Science and Sanity*, page 58,[3] was, 'But who would make a map like that? And who would try to follow it and meet disaster?' It had the element of being an affront to an intelligent person. I should have got the point, I believe, if the map had been Bombay, Calcutta, Singapore, for I was not sure as to the order.

A second type of resistance is described by, 'But that's not important.' or, 'So what?' I think it grows out of the instructor's engaging in lengthy explanations of facts already recognized by the student, without getting soon enough to their significance. That no two leaves are alike, or that there are myriads of facts at the microscopic level and submicroscopic levels of which we are generally unaware are easily accepted by students, but they may recognize them as facts without seeing the similarity to their own attitudes that 'all Japs are alike.' Instruction is prolonged at the expense of application. It seems to me that Hayakawa's chapter eight in *Language in Action* would be more effective if it sprinkled applications freely through the chapter. Has not Lee made his point by the end of the quotation on page 88, in *Language Habits In Human Affairs?* He does get excellently into the application phase of instruction within a few pages, however.

A third type of blockage, quoted, would read, 'But you're ignoring this other thing' or, 'You're guilty of allnesses.' Such a response is likely to grow out of situations in which the instructor, in the interest of emphasizing a principle, is a bit guilty, perhaps, of two-valued orientation by stressing one end of a continuum at the expense of the other end and the middle. Examples are: stressing the importance of seeing differences, too often implying 'instead of' rather than 'along with,' similarities; stressing the use of the cortex, also often implying 'instead of' rather than 'along with' thalamus; stressing awareness of change, and seeming to neglect the fact that there is often adequate permanence to justify prediction.

In this as with other elements in instruction there seems to be no disturbance *after* the principle is understood, but prior to that time students are likely to experience a state of hopeless con-

[3] This instructional device is representative of those which have become more or less standardized among instructors. That is my reason for making a direct reference to it here.

fusion expressed by: 'But what *may* I rely on?' 'But emotions are an *important* part of life.' 'Must I never form opinions about things?' On page 229, of *Language Habits In Human Affairs,* I think Lee is guilty of making a statement that is confusing to one not enlightened as to principle when he says that 'Man is an animal' is 'false-to-fact.' It isn't *false* to fact, is it? It is *inadequate* as to fact. Cannot the same point be made by calling it inadequate rather than false, and students will find that easy to see, and will thus not experience the emotional dithers that I and many another have experienced from its being called *false* to fact. To be sure, such confusion comes from missing the point of the instructor, from seeing the 'instead of' rather than the 'along with' in his meaning. Let instructors guard against seeming to present a two-valued orientation when seeking to emphasize a principle.

A fourth type of blockage is represented by, 'Why don't you speak English?' Particularly in the field of writing, and too much in the field of speech, instruction in general semantics is presented in language that is difficult for many people to understand. If one must already understand the principles in order to understand what he is reading, which seems to be the case with much that is written, what is the value in writing more?

I recognize that it was necessary in the beginning to explain the methodology to learned people, else it would not have become available for those of ordinary learning. I recognize, also, that much of what is written is directed only to those who are better versed in the subject than I. Nevertheless, general semantics can never serve its potential mission in the world if only the learned are instructed. Most of the present day writing should be directed to give understanding to people of ordinary reading ability, it seems to me, although there is scholarly research work to be done. Let the scholars become also instructors.

Perhaps I should reiterate that I am a novice in the subject I have discussed, but sincerity of purpose has impelled me to write. I believe resistances are delaying students' acceptance of this significant methodology for personal and social adjustment. I believe that the resistances can be minimized if instructors give more attention to the fact that their instruction is 'for someone.' I have seen other resistance-stirring subjects presented without stirring resistance. For example, some people who have discussed evolution have raised only blood pressure, while others have only stirred brain cells. Let us write about general semantics *to someone,* because it is a kind of knowledge that will be wasted if people in general do not get it into their nervous systems.

ON THE STRUCTURE OF 'MATTER'

Rather against my better judgment I will try to give a rough impression of the theory. It would probably be wiser to nail up over the door of the new quantum theory a notice, 'Structural alterations in progress—No admittance except on business,' and particularly to warn the doorkeeper to keep out prying philosophers.

A. S. EDDINGTON, *The Nature of the Physical World*

✯ NEWS AND MISCELLANY ✯

News of the Society

Interest in the Society for General Semantics has been tremendously stimulated in recent weeks by the distribution to members of *Quote*$_n$, an informal, illustrated, four-page newsletter on general semantics and its applications. *Quote*$_1$ to *Quote*$_4$ have already been sent out, and *Quote*$_5$ will probably be in the hands of members by the time they receive this issue of *ETC.* The committee of Chicago members who have taken upon themselves the task of preparing and distributing the newsletter consists of Mr. and Mrs. F. W. Coleman, Mr. and Mrs. George A. Taylor, Mr. and Mrs. Joseph D. Friedman, Mr. Herman Barnett, Mr. Gordon Haist, Lieutenant David Malcolm, and Mr. A. B. Steward. Members of the Society all over the country have been sending in, in response to Mrs. Coleman's invitation, letters, anecdotes, quotations, and queries for publication.

The most important practical result of the public lecture series given this past winter by the Chicago Chapter of the Society has been the fact that we were able with the proceeds to secure the services of Mrs. Coleman (formerly Anne Cleveland) as full-time Business Manager of the Society. The publication of *Quote*$_n$ is almost entirely due to her initiative in organizing the effort and undertaking the project in addition to her other tasks.

As Mrs. Coleman and the newsletter committee predicted, many members who have been hesitant about writing for *ETC.* feel much less hesitant about writing for *Quote*$_n$. Members and non-members are invited always, of course, to submit manuscript for publication in *ETC.*, but if any readers have ideas which they would prefer to have informally presented, they are urged to write them up for *Quote*$_n$. Black-and-white drawings and cartoons, suitable for reproduction by photo offset, will also be welcome. *Quote*$_n$ has no regular publication dates. It is distributed free to members of the Society.

By action of the membership on the recommendation of the Governing Board, the minimum membership fee, starting with the period beginning July 1, 1945, has been reduced to $4 a year.

Election Results

It is difficult to conduct democratic elections for officers in a Society with so scattered a membership as ours. The original organizing committee of the Society nominated for the first Governing Board members living in the Chicago area simply for reasons of convenience in getting necessary action in the beginning stages. The nominating committee for the election just completed adhered almost as closely to the Chicago area, feeling that, as the headquarters of the national Society are in Chicago, it is necessary for at least another year of the Society's infancy.

With the publication in this issue of our membership list and with the growing strength of membership in cities other than Chicago, it is hoped that our next Governing Board will be more representative of the nation as a whole. Indeed, it is hoped that future Governing Boards will be representative of other nations as well. Meanwhile, however, we have our present election results to report.

The following officers of the Society for General Semantics were elected by mail-ballots distributed in June, and take

office as of July 1, 1945: President, *Dr. Wendell Johnson,* professor of Psychology, State University of Iowa; Secretary-Treasurer, *Karl G. Hauch,* Manager, Investment Department, Mason, Moran and Company, Chicago; members of the Governing Board, *C. B. Congdon, M.D.,* psychiatrist, Student Health Service, University of Chicago; *Lieutenant Charles L. Kluss, U.S.N.R.,* Naval Officer Procurement, Chicago; *Margaret (Mrs. Carl) Plochman,* 1135 Asbury Ave., Evanston, Illinois; *Jean (Mrs. George A.) Taylor,* 6059 N. Albany, Chicago; *Edwin S. Hewitt,* Insurance Broker, 141 W. Jackson Blvd., Chicago. *S. I. Hayakawa,* as editor of *ETC.,* remains on the Governing Board *ex-officio;* the term of *Raymond W. McNealy, M.D.,* Professor of Surgery, Northwestern University, as member of the Board is unexpired.

At Houghton, Michigan

Members of all service departments and of more than half the technical departments at the Michigan College of Mining and Technology, Houghton, took part in a linguistics and semantics seminar held two hours a week throughout the twelve-week spring term under the direction of the language department. Problems of the meaning and use of such extra-verbal aids as maps, flowsheets, charts, diagrams, motion pictures, and photographs received much attention. Questions concerning the nature of engineering reports were kept to the fore during many sessions. Tentative plans call for two sequels; one is to be a seminar in basic formulations of mathematics and physics, conducted by men who contributed to the recent seminar some general discussions of mathematical symbolisms.

Reading Conference

The eighth annual Conference on Reading was held July 9 to 13 at the University of Chicago. This conference, held under the auspices of the Department of Education of the University of Chicago, has been steadily growing in importance. Although many of the papers read were technical and of immediate interest only to teachers of 'reading' and to librarians, the theme of the Conference, 'The Appraisal of Current Practices in Reading,' is obviously of importance to students of general semantics. Also, several of the papers presented interesting general methodological observations.

Dr. Paul Witty of Northwestern University (formerly Major) described 'Army Experiences with Readers and Reading and their Implications for Postwar Education.' Dr. Witty outlined the highly successful methods which the Army had used to teach illiterates to reach at least a fourth-grade standard of literacy in eight weeks. The aim of the Army in this program was strictly 'practical' in a limited sense, but even with these limited aims, the effective methods, it was found, were those based on teaching written language in a context of activity and with plentiful visual aids. In other words, the program was based on teaching language-fact relationships, not 'vocabulary,' etc., in the abstract. Dr. Witty felt that the Army program showed that 'reading' could not be taught alone as a 'subject,' but could be taught easily in a context of activity in which the students read about things which, at the moment, were important *to them.* (See Lieutenant Bontrager's article in this issue.)

Dr. Emmett Betts of Pennsylvania State College discussed differentiation of reading instruction and remedial reading pro-

cedures. He began by stating that a successful program of reading instruction should be based directly upon the dictum of general semantics that reading is the reconstruction of the facts behind symbols. He discussed teaching as individual guidance in group situations, and differentiated instruction as a way of living together in a classroom to achieve 'democratic objectives.' He outlined several 'levels of teaching competence,' the lowest being that in which procedures are based on the assumption that each child is 'the same' and should study the same 'words,' and the highest being characterized by what he called a 'semantic' or 'language-experience' approach. (F.P.C.)

Items

Ohio State University Press, Columbus, Ohio, announces the publication of *General Semantics in the High School English Program*, by Robert H. Moore. . . . W. Benton Harrison gave an address on general semantics to the Torch Club, Binghamton, N. Y., on March 11. . . . During July a course of eight lectures on general semantics was given by Dr. Francis P. Chisholm at the Institute of General Semantics. Thirty-five students were enrolled in the course. . . . The intensive Workshop and Seminar at the Institute of General Semantics begins August 13. Details will be found in the announcement on the inside back cover of this issue. . . . The University of Denver's Workshop in Basic Communication is now in progress, with Dr. Elwood Murray as chairman. Visiting lecturer during the first two weeks will be Dr. Chisholm; during the third week, Dr. Wendell Johnson; during the fourth week, Major Charles T. Estes, liaison officer of the Conciliation Service of the U. S. Department of Labor. . . . Alfred Korzybski will review in our next issue Jerome Frank's new book, *Fate and Freedom*. . . . S. I. Hayakawa's Poetry Magazine Modern Arts Series lecture, 'Reflections on the History of Jazz,' appeared in the May, 1945, issue of *Illinois Tech Engineer and Alumnus*. Reprints may be obtained free of charge from the News Bureau, Illinois Institute of Technology, 3300 Federal St., Chicago 16. . . . Mr. Harry Holtzman, one of our faithful readers, has edited the essays in English of the great abstractionist artist, Piet Mondrian. The collection is illustrated with many reproductions of Mondrian's paintings, some in color; it is published under the title, *Plastic Art and Pure Plastic Art*, by Wittenborn and Company, New York ($2.25).

Unconscious Identification

At the time the editor of *ETC.* was making up the cover of Vol. II. No. 2 (Winter, 1944-45), he was preparing for his classes a lecture on semantics and the law and rereading for that purpose Jerome Frank's *Law and the Modern Mind*. Unconsciously identifying legal-semanticist$_1$ with legal-semanticist$_2$, said editor turned in copy for the cover giving the name of Jerome Frank as the author of the article on 'Transcendental Nonsense' instead of that of Felix S. Cohen. (Authorship was correctly attributed in the text, however.) The editor, biting his fingernails in mortification, apologizes to Mr. Cohen.

Another error in the same issue: the article entitled 'The Pathetic Prodigy,' by Ernest L. Meyer, was reprinted by permission from *The Progressive* (Madison, Wisconsin). We apologize to Mr. Morris Rubin, editor of *The Progressive*, for inadvertently omitting our grateful acknowledgment.

✡ CORRESPONDENCE ✡

Answer Urgently Requested

SIRS:

Perhaps one of your readers would answer this question which has been disturbing me. It is in regard to anti-semitism. A friend of mine maintained that granting the truth of the general semantics approach to dispelling the 'reality' of an abstraction and the subsequent reorientation, an overt and/or covert anti-semite will remain a covert anti-semite simply *because he has not been given anything in return for the concept that has been taken away.* Here, let us say, is Mr. X, an anti-semite. Along comes Mr. Y, and by general semantics methodology, makes Mr. X realize that he is all wrong. Mr. X understands, realizes, agrees, is sorry, begs forgiveness for his former stupidity, and promises to never again . . . Good. *But he has not been given anything in stead.* No new 'notion' of 'reality.' He has seen no new 'light.' All that has happened is that general semantics has put out the old 'light.' But Mr. X has 'turned' and he now 'knows' that anti-semitism, Negrophobia, hate of the rich, hate of the masses, hate of Communists, hate of the New Deal, etc., are 'all of the same thing.'

Along comes Mr. Z and, for some reason, piques Mr. X and, the first thing you know Mr. X gives out with, 'Damn Jew!' or its unprintable and unnecessary equivalent. This, mind you, is not at all an imagined situation. I, myself, have heard what looked like an intelligent man who, when purchasing a book that required breadth of intelligence and depth of tolerance to read and appreciate, balked when asked for four cents for the New York City sales tax. 'That damned Jew, LaGuardia. Is there any wonder there's race prejudice?' said he, paying the four cents. I know, for I was the clerk that sold him the book. LaGuardia, no less. Fiorello H. LaGuardia. Less likely than Roosevelt. But a 'damned Jew' nonetheless.

What, again, in the literature of general semantics offers a 'new' notion, something to *replace* what has been destroyed?

I ask this not only as regards anti-semitism, but as regards labor, chairs, and sealing wax.

BENJAMIN NEWMAN

Brooklyn, N. Y.

News from Australia

SIRS:

Miss Kendig has suggested I write you telling of some of my experiences during the past three years in the South-west Pacific, especially in relation to general semantics.

Upon arrival in Brisbane, Australia, in April, 1942, I was placed in command of a convoy of American Army trucks bound for Melbourne. The road took us through many inland communities where we had an excellent opportunity of seeing some of rural Australia. In anticipation of a Japanese invasion, road signs had been removed. This required us to stop and inquire road directions at almost every intersection. Sometimes there would be no one for miles whom we could ask. In this case we'd flip a coin. The coin was nearly always wrong.

The food shortage, because of the war, had not hit Australia yet and in most places a tremendous steak with two eggs,

a staple Australian dish, could be had for 2/6 (40c American).

Many of the people in these small towns, and later in Sydney too, had not seen an American serviceman before. So, coming as we did, when Australia was believed to be in danger of a Japanese invasion, we were somewhat idolized. Many homes were thrown open and hospitality was extensive.

In completion of this trip I was sent to Sydney to establish a signal depot. One day, shortly after my arrival, I chanced to see a notice posted in the American Center announcing weekly meetings of the Australian Psychology Centre. The night I dropped in, the reading of Jung's 'Psychological Types' was scheduled for the evening. In talking with the president, Mr. E. O. Haes, I happened to mention general semantics. He asked me to tell the gathering a little about it. None of them had heard of it before. It seemed as though the more I told them the more they wanted to know, and with increasing eagerness. Finally I agreed to give a prepared introductory talk on the subject at the following meeting.

The Australian Psychology Centre is composed primarily of a group who had been or were being 'psycho-analysed' by a woman analyst in Sydney. I forget her name, but when she died some ten years ago the Centre was formed more or less in honor of her memory.

They advertised the talk in one of the Sydney newspapers and as a result the turnout which was normally around 15 went as high as 50. The majority of a Sydney University night psychology class played hooky that night in order to attend. Dr. A. H. Martin, who taught the class, later told me he, himself, would have liked to attend with the entire class if that had been possible.

As a result of this talk I was asked to give a course. This I consented to do if it could be given in an informal manner with no promise of prepared lectures. This was necessary because due to my military duties I could not depend on having sufficient time for formal preparation. The classes were very informal, questions being asked at any time, with discussions following.

Frequently we'd go off on a tangent discussion and not get back to the original subject that evening. However, I didn't allow digressions to take us off the subject of general semantics. The material for the course was taken primarily from Hayakawa's and Lee's books and the First Congress Papers. It would have been most helpful if we had had a copy of *Science and Sanity* and the *Second Congress Papers,* but we didn't.

The majority of the class members, especially the 'old timers' of the Centre, were 'ripe' for general semantics. They responded well to the homework assigned and coöperated with the telling of various applications they had made in their own daily lives. By the time I was transferred to New Guinea (September, 1942) many of them were making quotes with their fingers and using, with reasonable success, a structural differential which I had made from plywood. I used as many extensional devices as I could, such as holding objects up for description on the macroscopic level, diagrams on the blackboard, the structural differential, etc.

In addition to the class at the Centre I also conducted a small class for some personal friends in Sydney. This class was held once a week and was even more informal in nature than the one at the Centre. The class varied from five to ten members and was held in the homes of the various members. Although not as much progress was made in this class as in the other I felt as though some pro-

gress was made in each case. Following the class tea and cakes were served in proper Australian style. The class continued until I left Sydney.

My next assignment was to establish and operate a signal post in Port Moresby, New Guinea. It was my toughest job in this war. The Japanese were fighting only 35 miles from where we were and had just during that month been stopped in their advance on Port Moresby over the Owen Stanley Mountains. We had air raids almost nightly. Our depot was pitifully short in personnel, materials, vehicles, and signal equipment to issue to the troops. Food was about 99 per cent canned or powdered, entrées varying from corned beef to salmon to beans and back to corned beef again. I had a moderate case of dengue fever my second week there. Female nurses had not arrived yet in the theater. Male nurses were untrained and inadequate. When the Japanese came over at night those patients not too sick would get up and get into their slit trenches with the mosquitoes. The rest of us would just sweat it out in bed. An illustration of our worst time is when one night between sundown and sunup 57 truckloads of signal equipment arrived to be unloaded by our ten men with seven separate interruptions by the Japanese. These varied from 10 minutes to an hour and a half. During the period I was there this depot was the only one in New Guinea and served the ground forces, air forces and Australian army. It is not my intention to imply that many servicemen have not had far worse times than the above.

In March, 1943, I was transferred to the Advance Echelon Fifth Air Force also in Port Moresby where I was assigned as Signal Supply Officer. This was much easier work although the hours were just as long. Here my major concern was to keep correspondence and requisitions moving, plan equipment needed for future operations, and control the issue and distribution of critical items of equipment.

I remained on this job until January, 1944, when I was detailed to act as liaison officer for the Fifth Air Force in signal supply matters. This required frequent flights to all of the bases in New Guinea then held by Allied forces. My last job before returning to the U. S. in September, 1944, was the 91st Photo Reconaissance Wing in Nadzab and Biak Island.

After leaving Sydney I made four trips back, two leaves and two on business. Each time I visited the Centre and noted their progress in general semantics. By the end of the two year period most of the group had purchased personal copies of *Science and Sanity*, begun the study of its more difficult sections, started several new classes each in different stages of study, and changed the name of their group to 'The Society for General Semantics and Psycho-logics.' A recent letter from Mr. Haes indicated that they are still going strong and have a class now in straight mathematics. Miss M. Kendig, Associate Director of the Institute, in a recent letter to me stated 'According to Miss McNaught's letter I would say that this group in Sydney is carrying on one of the most intelligent pieces of group work that is being done anywhere in the world.'

If any of my Australian friends should read this I hope they will forgive me for any inaccuracies I may have recorded. I venture to say that I have gained much more understanding of general semantics while teaching than any of the students, and thoroughly enjoyed the experience.

LAWRENCE O. ANDERSON
Signal Corps, Avon Park, Fla.

Student Disagreements

SIRS: In my tenth grade speech class at South High School the students had begun to get extensional experience in connection with the statement that since the word is not the thing, they must make an effort to understand what each person means when he uses a word, expecting differences according to difference in experience and in what has been extracted. At that point in their development I made this assignment. When people in your presence are talking, watch for any signs of tension. Then try to see what word is causing the tension and then ask, 'What do you mean by —?' (Using that word in the question). Report in class what they say and how they react when the differences in meaning are brought out. Here are a few of the results in the students' own words.

1. Over the weekend we had company. My mother and this man [their guest] were talking about the weather. My mother said that last year the first snow came in October. This man said it wasn't in October but in September. They were arguing for a while. Then at last they found that the man had been in Colorado Springs and my mother in Denver when the first snow came.—K. T. (girl).

2. The other day I was walking home with two friends of mine. We were talking about different shows we had seen, and one girl asked the other if she liked Dennis O'Keefe in *The Story of Dr. Wassell*. She said, 'Why, Dennis O'Keefe wasn't in *The Story of Dr. Wassell*.' Right away I said, 'Sure he was,' and I told her of the part he played. She stuck to her statement, saying, 'I always listen to what he announces and he didn't announce his name, and if he was in it, he would have.' Then I said, 'What do you mean by "announcing his name?" ' She said, 'Cecil B. DeMille always announces the players' name.' She was talking about the Lux Radio Theater. We were both right, because he had played an important part there, but he hadn't been in the movie at all. After we found out that we were talking about two different things we just laughed and all the tension was gone.—B. F. (girl).

3. I work at Montgomery Ward's on Saturdays and an incident took place last Saturday that caused tension until the situation was analyzed. We bill journals that contain twenty-four orders. At about eleven o'clock one of the bosses from the eighth floor came by and asked me how many I had billed. I said, 'Ten.' I meant ten journals, and he thought I meant ten orders. That caused tension on his part. If I had not had general semantics I wouldn't have said anything, but I thought of what you told us. So I explained that I had done ten journals. After he understood the situation, we laughed about it and there were no hard feelings.—R. C. October 25, 1944 (boy).

4. Well, the other day my brother-in-law and I were trimming celery, and he told me to put the splits (splits are celery bunches about six inches wide and twelve inches long) in the crates. Crates that are broken are also called splits. He told me to set the split crates on another pile. Then he went to the shippers', and when he came back, he asked me how many splits I had. So I said a hundred and fifty and he said he wasn't going to buy any more crates from that guy (a man he buys crates from). So I said, 'What do you mean by "splits"?' He said split crates, and I meant splits—celery. And we were both right—but we each meant an entirely different thing. We just laughed it off.—A. L. (boy).

5. My sister had just returned from deer-hunting. She said she had taken the deer to Sailor's to have it skinned and frozen. I said that was silly, that sailors don't do that. She said that they did, too; that that was their business. Then I asked her what she meant. She explained that she was talking about Sailor's Frozen Food and Storage Lockers. I was thinking of *sailors*.—J. B. (girl).

These are, to be sure, trivial incidents, but they demonstrate, no less than disagreements at higher levels of abstraction in politics and ethics, the mechanisms of conflict. It is my conviction that students trained in 'consciousness of abstracting' by such methods as these will in later life continue to apply the methods to larger affairs. Incidentally, it was discovered that not all people like to have their disagreements settled. One student reported that people 'resented her interfering in their argument' and told her to mind her own business.

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Oaks from Little Acorns

SIRS:

A U.P. dispatch in the Chicago *Sun* of June 3, dated Beyrouth, June 2, offers a striking example of what can happen when violent and immediate action is taken to a verbal stimulus. In this case, if the safeguards of *delayed reaction* and checking words again the 'facts' (in this case, the intended 'meaning') had been observed, tragedy might have been averted. The dispatch follows:

'The spark that actually touched off the Syrian disorders last week was a spectator's cry of protest at a decision by the referee at a football match in Hama, a witness said today.

'One team was awarded a score and a Syrian in the stands yelled out in French: *"Pas de goal"* (no goal).

'Soldiers of the Troupes Spéciales, local Syrian levies, and Frenchmen thought the Syrian said *"Pas de Gaulle"* (down with De Gaulle). The Troupes Spéciales started a fight with the innocent spectator and nine soldiers were arrested by the nationalist police.

'A few days later the Troupes Spéciales repeatedly armed themselves for revenge and a series of incidents occurred, leading to serious fighting by May 28 when the French shelled Hama.'

Possibly the foregoing report is exaggerated. Admittedly there were other factors which created the setting for violence. Still it is highly possible that had not someone faultily identified *'de goal'* with *'De Gaulle'* the existing problems might have been solved amicably—while the resulting violence may now have made impossible a friendly settlement of these problems. Now England is involved and the incident may have dangerous effects on Big Five unity at a time when the World Security Charter is at stake. We hesitate to speculate on what *could* happen as a result of this occurrence in the years to come, if the Security Charter should be affected.

It isn't often that a misevaluation can be traced down and shown so clearly as in this almost too pat example. One wonders just how many of the world's blunderings into tragedy may have been touched off by equally naive but less obvious semantic errors. Do we need stronger evidence that semantic misevaluations *do* have serious consequences, and that widespread training in general semantics is vital?

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